Annual Report on Forest and Forestry in Japan

Fiscal Year 2010

(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 the article X of the “Forest and Forestry Basic Act.” This document is the summary of the annual report for FY2010.
# Table of Contents

Forest and Forestry Topics in FY2010 ................................................................. 1

Chapter I  Wood Demand Expansion: Toward the New “Wood Culture” ............ 3

Chapter II  Global Warming and Forest ............................................................ 10

Chapter III  Forest Management ..................................................................... 11

Chapter IV  Forestry and Rural Mountain Communities ................................. 14

Chapter V  Wood Supply/Demand and Wood Products Industry ....................... 18

Chapter VI  National Forest Management........................................................ 21

Appendix ........................................................................................................... 23
FOREST AND FORESTRY TOPICS IN FY2010

TOPIC 1. New Initiatives for the Revitalization of Forest and Forestry

The “Forest and Forestry Revitalization Plan,” developed in 2009, was endorsed as a part of the “Japanese Government New Economic Development Strategy” in June 2010. The Ministry of Agriculture, Forestry and Fisheries (MAFF) began to study possible measures for the realization of the “Forest and Forestry Revitalization Plan” from January 2010. In November 2010, the final report on those measures was publicized. The final report proposed to review the Japan’s forest and forestry policies, institutions and organizations as a whole, for the development of the new forest and forestry policies in Japan.

![Fig.1: Final Report of the Forest Policy Revision Committee](image)

In Response to the final report, the MAFF will implement the review of forest planning system, the introduction of a system to assure proper forest management (including the introduction of the “forest management and environmental conservation direct support system”), acceleration of the development of forest road system, and development of forestry technical experts, for the realization of the “Forest and Forestry Revitalization Plan” from the FY 2011.

![Fig 2: “Forest management and environmental conservation direct support system”](image)
TOPIC 2.  East Japan Earthquake Disaster

On March 11, 2011, the largest earthquake ever recorded in Japan hit the eastern part of Japan, especially, Tohoku region, causing severe disasters, including flooding by “tsunami.” Along the coastal areas in Miyagi and Iwate Prefectures, the earthquake and tsunami caused major damage on coastal forest and wood manufacturing facilities. The MAFF will put the maximum efforts for the recovery and reconstruction of the disaster.

TOPIC 3.  New Legislation for the Promotion of Wood Use in Public Buildings

In May 2010, the new legislation to promote wood use in public buildings was adopted in the Diet and put into force in October 2010. The Basic Plan developed according to the legislation sets the targets for wood use, including all low-rise national public buildings being built with wooden structure.

TOPIC 4.  CBD COP10

In October 2010, the tenth meeting of the Conference of the Parties (COP10) to the Convention on Biological Diversity was held in Nagoya, Aichi Prefecture in Japan. The COP10 adopted the “Strategic Plan for Biodiversity 2011-2020 and the Aichi Biodiversity Targets,” the global targets for the effective implementation of the Convention and the “Nagoya Protocol” on Access to Genetic Resources and the Fair and Equitable Sharing of Benefits Arising from their Utilization.

TOPIC 5.  International Year of Forests 2011

The year 2011 is the “International Year of Forests” according to the UN General Assembly resolution. In December 2010, the Bridging Ceremony from the “International Year of Biodiversity (2010)” to the “International Year of Forests” was conducted in Kanazawa, Ishikawa Prefecture. The national theme of the Year was decided as “Walk in Forests.” The national committee of the Year will implement various activities for the promotion of the year, including related symposia.
Chapter I: Wood Demand Expansion: Toward the New “Wood Culture”

1. Background of wood demand expansion

1.1. Wood supply

Since 2002, the supply of Japan’s domestic wood has been increasing, with the maturing of domestic forest resources in the forest plantations planted after the post-war period (Fig.1-1). On the other hand, the supply of imported wood is declining since its peak in 1996, with the shrink of domestic wood demand and limited volume of available forest resources in wood exporting countries (Fig.1-2). As a result, the self-sufficiency rate of Japan’s wood supply began to rise from 2002. The self-sufficiency rate in 2009 was 27.8% (Fig. 1-1).

![Supply of domestic wood and wood self-sufficiency rate in Japan](image1)

![Wood Imports in Japan](image2)

1.2. Wood Demand

The domestic demand of wood has been declining since 1996. In 2009, the volume of wood demand dropped by 19% from the previous year. The volume of wood demand per capita has also dropped to 0.50m³, approximately a half of the peak year in 1973 (Fig.1-3).

![Wood Demand in Japan](image3)
In particular, the volume of wood demand for lumber production dropped to one third of the peak year, due to the decline of the number of domestic housing starts (Fig.1-4). Wood demand for chip and pulp production is also on the decline due to the stagnation of paper and paperboard consumption. Wood demand for plywood production is also on the down trend, while the volume of domestic wood used for plywood production is increasing (Fig.1-5).

Under such circumstances, the number of Japan’s population started decreasing in 2006. The number of population is expected to decline approximately by four million in 2020 and by 12 million in 2030 from the current level.

Accordingly, the domestic housing starts and consumption of paper and paperboard are not expected to increase sharply any longer. Given such conditions, the volume of wood demand is expected to continue to decline without any additional measures.

1.3. Necessity of wood demand expansion

Wood use contributes to the development of comfortable living condition, promotion of local economy, and mitigation of global warming. In particular, the use of domestic wood contributes to the fulfillment of the multi functional roles of forests and promotion of local economy.

The revitalization of forestry requires the expansion of wood demand, along with the development of wood supply capacity, following the “Forest and Forestry Revitalization Plan.”

For the expansion of wood demand, new sectors of wood use should be developed, in addition to the traditional demand in housing sector. Improvement of domestic wood supply system is also important for the replacement of imported wood products by domestic wood products.

It is also important to note that the expansion of wood demand would also contribute to further development of Japan’s “wood culture,” which was nurtured in the long period of time, as well as economic development.
2. Wood Demand Expansion to Date

2.1. Housing Sector

Approximately 40% of Japan’s wood demand is used for construction. In particular, the trend of new housing starts of wooden houses significantly influences wood demand as a whole.

In Japan’s traditional wooden houses, approximately 0.20 m³ wood is used for each 1 m² of floor area. The share of domestic/imported wood in traditional wooden houses differs among the parts of wooden structure (Fig.1-6). On the average, the share of domestic wood is as low as 30% or less. Therefore, domestic wood has margin to expand its demand in the housing sector.

Under such circumstances, the Forestry Agency began to implement the “New Wood Products Distribution and Processing Project” and the “New Wood Production Project” for the stable supply of wood products to major housing companies or local home builders with lower costs. As a result, major housing companies began to use domestic wood more aggressively in their business activities. Also, plywood mills began to use large amount of domestic wood for softwood plywood production. The share of domestic wood in material inputs of plywood mills reached as high as 64% in 2009.

Further, the Forestry Agency is promoting local housing projects through the cooperation among forest owners, log producers, lumber producers, and local home builders, who are willing to use local wood products. Local governments are also promoting the use of local wood in housing sector.

2.2. Other Sectors

After the revision of the Building Standard Law in 1987, large scale buildings with wooden structure were allowed to be built with wooden structure. Also, the Ministry of Education, Culture, Sports, Science and Technology (MEXT) began to promote wooden structure and wooden interior in school buildings from 1985.

Since 2003, the MAFF is promoting wooden structure and wooden interior in its own office buildings, wood use in civil engineering projects, and procurement of wooden products, under its fundamental principle of “wooden structure, wooden interior, and wooden products.”

As for civil engineering projects, the Forestry Agency added popular wooden structure, including wooden fence, to the public construction work standard specifications. The “Green Procurement Act” in 2001 also promotes the use of small-diameter thinned logs for public construction projects. Private companies also developed new construction techniques with wood products, including the ground reinforcement technique with wood stakes.

As for daily necessities, office equipment, paper for printing, envelopes, name cards, and paper bottles for drink which are produced from thinned wood are beginning to be used. As for energy supply, chips and wooden pellets are becoming more popular. Finally, wood products exports are increasing since 2001, with the major targets of China and Korea.
3. Current Topics on Wood Demand Expansion

3.1. Wooden Public Buildings

3.1.1. Recent trend

The share of wooden buildings in public buildings is lower than that of buildings in general (Fig.1-7). This is because the central government and local governments promoted non-wood building structure for the prevention of disaster after the World War II.

In May 2010, the new legislation to promote wood use in public building was adopted in the Diet, put into force in October.

The Basic Plan under the new legislation turned the previous “non-wood policy” to the “wooden structure and wooden interior decoration as long as possible.” The plan promotes wooden structure for the lower height building which are exempt from fire resistant structure.

In 2009, The MEXT and the Forestry Agency established the “study team on wooden school buildings.” The team studied possible measures to promote wood use in school institutions to publish a booklet on the points for attention to implement the projects and the case studies on wooden school buildings.

3.1.2. Analysis

Generally, public buildings require higher fire-resistant performance. Wood products can be used for public buildings as long as those products satisfy the performance standards.

Also, the costs of wooden structure buildings can be equivalent to those of reinforced concrete (RC) structure buildings (Table 1-1). However, the costs of wooden public buildings tend to become higher, due to the lack of past experiences, use of specialized components, and too many considerations on design.

For the development of wooden public buildings, large amount of wood satisfying various standards, including long length, large diameter, JAS standard, legality and sustainability, need to be procured for a very short period of time limited by the fiscal policy of governments.

However, the supply of wood products for wooden public buildings is insufficient. For example, the ratio of artificially dried lumber in domestic lumber production is as low as 30%. The share of JAS certified lumber mills is also as low as 10%.

Further, staffs in governments or designers in building design office do not have enough knowledge on large scale wooden building construction.

<table>
<thead>
<tr>
<th>Type</th>
<th>Size</th>
<th>Construction costs (million yen)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Wood</td>
</tr>
<tr>
<td>Office building</td>
<td>One-storied (500㎡)</td>
<td>117</td>
</tr>
<tr>
<td></td>
<td>Two-storied (500㎡)</td>
<td>142</td>
</tr>
<tr>
<td>School building</td>
<td>One-storied (500㎡)</td>
<td>98</td>
</tr>
<tr>
<td></td>
<td>Two-storied (1,500㎡)</td>
<td>377</td>
</tr>
</tbody>
</table>

Note: Construction costs are estimation for building with each structure under the same conditions.

Table 1-1: Construction costs of public buildings with wood and reinforced concrete (RC) structures
3.1.3. Challenges

Based upon above analyses, following measures need to be implemented.
- Introduction of wooden structure for low-rise public buildings, and introduction of wooden interior decoration for all public buildings.
- Cost reduction through standardization of size and structure of buildings.
- Improvement of wood products supply suitable for public buildings.
- Promotion of wooden structure to local governmental staffs or designers in building design office.
- Development of specialists on wooden buildings.
- Revision of standard on wooden buildings, in response to the development of wood use technology.

3.2. Energy Use of Wood Biomass

3.2.1. Current Trend

In response to the “Renewable Portfolio Standard Law” in 2002, which requires electric power companies to procure electricity produced from renewable energy for certain quantity, the number of thermal power plants which use wood biomass with coal for power generation is increasing.

The Ministry of Economy, Trade and Industry (METI) is studying the introduction of the “Feed in Tariff System” for renewable energy, including power generation from biomass.

Further, wood biomass use is now given a "credit" on carbon emission reduction, under the “Domestic Credit System” and the “Offset Credit (J-VER) System.”

3.2.2. Analysis

Among the variety of wood biomasses, most of “mill residue wood” and “construction refuse wood” are already almost fully utilized. Therefore, the use of “unused thinned wood” is inevitable for the promotion of energy use of wood biomass (Fig.1-8). However, the cost of collection, transportation, and processing of “unused thinned wood” is still very high.

The prices of wood biomass per heat value are mostly equivalent to those of fossil fuels (Fig.1-9). However, the introduction costs of wood biomass burners are much higher than those of fossil fuel burners.

Fig.1-8: Production and utilization of wood biomass

Fig.1-9: Prices per heat value for wood biomass and fossil fuels
Among the combustion system of wood chips, heat supply with chip boiler is more efficient than “gasifying heat and electricity supply system” or “steam power generation system.”

Although the supply volume of wood pellet is increasing, the production capacity of each plant is much smaller than that of European countries, because of the small size of lumber mills which supply material to the pellet plants. In fact, average production volume of pellet plants is 100-1,000 tons in Japan, while that in European countries is more than 10,000 tons. Therefore, competition between domestically produced wood pellets and imported wood pellets may become intensified in the near future.

### 3.2.3. Challenges

Based upon above analyses, following measures need to be implemented.

- Stable supply of unused thinned wood with lower costs.
- Development of demand for wood biomass through various policy measures.
- Reduction of initial costs for the introduction of wood biomass burners.
- Stable supply of wood pellets.
- Development of new technologies of fuel production from wood biomass.
- Improvement of consumer services.

**Case study: Mixed use of wood biomass in thermal power plant**

An electric power generation company “S” in Niihama, Ehime prefecture, initiated the use of wood chips in conjunction with coals for power generation. The wood chips are processed in its own facility from unused thinned wood collected from the area surrounding the power plants by its affiliated companies. The plant plans to use 12.5 thousand tons of unused thinned wood (mixture rate: 2.5%) annually.

### 3.3. Wood Export

#### 3.3.1. Current trend

The value of Japan’s wood products exports has increased since 2001 (Fig.1-10). Most of exported products are highly processed products, including wood board or builders’ joinery and carpentry of wood.

The Japanese government is promoting the exports of value-added wood products to China and Korea. The Government is promoting Japan’s wood products through exhibition in the housing trade shows in China and Korea.

In August 2010, the Japan Wood Products Export Promotion Council signed an agreement with the China’s National...
Standard Management Committee for the “Wooden Structure Design Standard.” The Council will participate in the revision process of the “Wooden Structure Design Standard” so that Japan’s wood species are included in the Standard.

3.3.2. Analysis

Japan’s wood products industry is slow to develop wood products for export, which take into consideration the consumers’ needs in the target countries. This is because most of wood products companies in Japan have been supplying wood products solely to domestic consumers.

In contrast, the US and Canada have been implementing comprehensive wood export strategy with the target of China, which incorporates both wood supply and technical assistance, for more than ten years, through the government and private sector cooperation.

In 2009, the Chinese Government announced the “Forest Products Industry Revitalization Plan” to maintain the world’s largest producer and exporter of furniture, wood-based panels, wood flooring, and wood doors. Through this plan, China is expected to further promote its wood import for the export of value-added products.

3.3.3. Challenges

Based upon above analyses, following measures need to be implemented.

- “Marketing” wood products, in response to the needs of consumers in the target countries.
- Investigation of the standards and regulations in the target countries for necessary revisions.
- Strong cooperation between public and private sectors for the promotion of wood exports.

4. Toward the New “Wood Culture”

4.1. Prerequisites for the wood demand expansion

For the wood demand expansion, following measures need to be implemented.

- Development of stable supply system of raw material (e.g. coordination and consolidation of forestry practices, expansion of forest road system, introduction of forestry machines, human resource development).
- Development of processing and distribution system of wood products.
- Promotion of Research and Development (e.g. development of new wood products and new wooden materials).
- Promotion of consumers’ understanding on wood use (e.g. national initiative on wood use promotion, wood use education, visualization of environmental contribution through wood use).
- Development of social scientists in wood use (e.g. specialists on distribution, marketing, or environmental impact assessment of wood use).
- Strong cooperation among stakeholders.

4.2. Toward the New “Wood Culture”

The expanded wood demand would contribute to forestry production activities and proper forest management.

For the expansion of wood demand, sustainable use of forest resources is very important. Forest resources need to be maintained by keeping the volume of demand taking into account of the volume of forest growth, and forests need to be conserved by replanting in harvested areas.

Japan is the country of “wood culture,” which fully makes use of various wood according to their characteristics. It is expected that the new “wood culture” is created through the efforts for wood demand expansion.
Chapter II  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 concentrations. The Kyoto Protocol sets legally binding targets of greenhouse gas emission reduction by at least 5%, compared with the base year 1990 for developed countries, during the first commitment period 2008-2012. Japan’s emission reduction commitment is 6%.

The total volume of Japan’s greenhouse gas emission was 1.209 billion CO$_2$-tons in 2009, 5.7% decline from the previous year. This volume is 4.1% less than that of the base year of 1990 (Fig.2-1).

2.  Actions toward the achievement of the Kyoto Protocol Commitment

2.1.  Promotion of forest sink activities

Under the Kyoto Protocol, greenhouse gas removals by sink resulting from “afforestation,” “reforestation,” and “forest management” may be accounted for to meet the emission reduction commitment. Japan sets the domestic target of removal by forest at 13 Mt-C/year (47.67 Mt-CO$_2$/year, or 3.8% of the volume of total emission in the base year).

To meet the removal target of 13 Mt-C/year through carbon sink, Japan has been conducting comprehensive measures including promotion of forest management, wood supply, and wood use.

2.2.  Credit systems in forest related area

In Japan, several systems provide “credits” for emission reduction or carbons sink through the use of wood biomass or proper forest management.

As of December 2010, the “Domestic Credit System” has issued 35 thousand tons-CO$_2$ of credits for 44 forest-related projects, including the boiler fuel transition from fossil fuel to wood biomass, while the “Offset Credit (J-VER) System” has issued 35 thousand tons-CO$_2$ of credits for 26 forest-related projects including the fuel transition and proper forest management through thinning.

3.  International Negotiations for Global Warming after 2013

Currently, negotiations on the international framework after 2013 are underway. The COP16 of UNFCCC, held in Cancun, Mexico, in November-December 2010, adopted the “Cancun Agreements” which took note of the emission reduction targets submitted by developed and developing countries as formal documents.

Regarding forest issues, the accounting approaches of forest sink and harvested wood products (HWP) and the issue of “reducing emissions from deforestation and forest degradation in developing countries (REDD-plus)” were discussed.

These issues will be discussed toward the COP17 in South Africa in November-December 2011.
Chapter III  Forest Management

1. Forest Management

1.1. Multiple functions of forests
Forests have multiple functional roles, including carbon sequestration and biodiversity conservation. In order to fulfill those functions, it is necessary to develop vigorous and diversified forests.

1.2. Forest resources
Two third of Japan’s land area is covered with forests. The total area of forests is 25 million hectares. Approximately 40% of these forests are artificially planted forests. The major species of planted forests are sugi, hinoki, and karamatsu (larch). The ownership of forests can be divided into approximately 60% for private owners, 30% for national government, and 10% for local governments.
The total volume of forest resources reached 4.4 billion m$^3$ in 2007 (Fig.3-1). The forest resources in planted forests are now at the stage for intensive use.

1.3. Forest management
In order to maintain the multiple functional roles of forests, forests need to be properly managed and conserved.
The Forestry Agency is promoting “thinning” through the assistance for joint thinning projects among forest owners, construction of forest road, and use of thinned wood for public works, with the goal of 3.3 million hectares of thinning during 2007-2012. In 2009, total area of thinned forests was 590 thousand hectares (Fig.3-2).
In Japan, the “Japanese cedar (sugi) pollinosis” is acknowledged as a nationwide problem. The Forestry Agency is promoting the conversion of cedar forests to less-pollen cedar forests, through the development and expansion of less-pollen Japanese cedar variations.

1.4. Conservation of Forest Biodiversity
In October 2010, the COP10 to the Convention on Biological Diversity was held in Nagoya, Aichi prefecture. The Conference adopted the “Strategic Plan for Biodiversity 2011-2020 and the Aichi Biodiversity Targets,” the global targets for the effective implementation of the Convention and the “Nagoya Protocol” on Access to Genetic Resources and the Fair and Equitable Sharing of Benefits Arising from their Utilization.
The Forestry Agency is promoting conservation of forest biodiversity, through fixed point observation research, development of technique to comprehend forest vegetation, and promotion of those activities, in response to the proposals from the “Forest biodiversity Working Group” in 2009.

1.5. Revision of forest planning system

The Forestry Agency is considering possible revision of forest planning system, including the introduction of “forest management plan” which will be developed by multiple forest owners for large part of forest area, and introduction of system to assure proper forest management.

1.6. People’s participation in forest management

The number of civil organizations of “forest volunteers” reached 2,677 in 2009. These voluntary organizations have willingness to participate in voluntary forestry activities. Also, many private companies are interested in forest management and conservation, as a part of their corporate social responsibility (CSR) activities.

Many prefectoral governments have introduced local taxation schemes exclusively used for forest management and conservation activities. Kochi prefector introduced such system for the first time in 2003. As of 2010, the number of prefectores with similar schemes reached 30.

The Forestry Agency is also promoting “environmental education in forests” through planting of seedling, thinning of forests, and observation of wild plants and animals. The Agency is also promoting the revitalization of “satoyama” (community forests in rural areas) as a field of experimental study on forest and forestry.

2. Forest Conservation and Disaster Control

2.1. Conservation Forests

Under the Forest Act, forests providing particularly important public benefits, including securing water resource and preventing disasters, are designated as “conservation forests.” As of 2009, the total area of conservation forest reached 11.96 million hectares, or 48% of total forest area and 32% of total land area in Japan. In the “conservation forests,” general forest management is allowed with specific limitations for each type of conservation forests.

2.2. Disaster control

In 2010, heavy rainfall in the rainy season caused severe natural disasters in mountainous regions, including large-scale landslide and avalanche. In response to such disasters, the Forestry Agency conducted forest conservation works through the development of disaster control facilities and forest stands.

2.3. Pest, disease and wildlife control

The volume of pine wood damaged by pine wood nematode (Bursaphelenchus xylophilus) has declined to 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 spread of chemicals and “combating measures” through logging and fumigating of damaged trees.

In 2009, damages of Quercus spp. trees caused by oak platypodid beetle (Platypus quercivorat) have been found in Tokyo, Aomori, Iwate, Gunma, and Shizuoka prefectures for the first time. The number of prefectures with those damage reached 29. The Forestry Agency is combating the beetle through logging and fumigating of damaged trees and development of preventive measures (Fig.3-3).

The major animal causing forest damage is deer, followed by bears. Approximately 70% of damaged forest areas are caused by der. The Forestry Agency is addressing damage by deer through installation of preventive fences and control of the number of deer population.

3. International Cooperation

3.1. States of World Forest

During 2000-2010, world forest area declined by 5.21 million hectares annually, according to FAO. In Africa and South America, 3.00 million hectares of forests decreased annually, while in Asia, 2.24 million hectares increased annually.

3.2. Promotion of sustainable forest management

For the promotion of sustainable forest management, development of “criteria and indicators” has made progress through various international processes. Japan belongs to the “Montreal Process” in which developed countries other than European countries participate. In the 21st Meeting of the Montreal Process, member countries shared experiences in the application of criteria and indicators.

Illegal logging substantially hinders the efforts for sustainable forest management. The Japanese Government is promoting international efforts to combat illegal logging under the fundamental principle “illegally harvested timber should not be used.”

The year 2011 is the “International Year of Forests.” The Forestry Agency will hold various ceremonies and symposia under the national theme of the Year, “Walk in Forests”

3.3. Japan’s cooperation initiatives

Japan is promoting international cooperation for the sustainable forest management in developing countries, through bilateral and multilateral schemes including technical and financial assistance.

Case study: Development of wood traceability system in Indonesia

Indonesia and Japan cooperatively developed wood traceability system as a measure to combat illegal logging. The system traces the flow of wood from logging site to plywood mills by use of “two-dimensional barcodes.”

Photo: Putting “two-dimensional barcodes” on logged trunk.
Chapter IV  Forestry and Rural Mountain Communities

1. Forestry

1.1. Value of forestry production

In 2009, the value of gross forestry production was 412.2 billion yen, or 36% of its record high in 1980. Among the gross production value, wood production accounts for 45%, while mushroom production for 53% (Fig.4-1).

1.2. Forestry management

In 2008, the average income of forest owners from forestry activities was as low as one hundred thousand yen, or 190 thousand yen decline from the previous year. This decline is attributed to the decline of income from log sales. Among the household forestry management organizations, only 1.7% of them depend on forestry as their major household income category.

In Japan, most of forests are owned by large number of small scale forest owners. Further, the costs for growing forests are very high. Forest owners tend to be reluctant in forestry practice including logging and planting, due to its low profitability.

1.3. Forestry contractors

In Japan, forestry contractors consist of three categories: forest owners themselves, the Forest Owners’ Cooperatives, and private forestry contractors. Among those categories, the Forest Owners’ Cooperatives are major forestry contractors, conducting more than a half of forestry practices including planting, weeding, and thinning in Japan (Fig.4-2).

In October 2010, the National Federation of Forest Owners’ Cooperative Associations adopted its policy to put the “proposal-based coordination and consolidation of forestry practices” as their priority activity.

Fig.4-1: Value of gross forestry production

Fig.4-2: Share of contracted forest operation areas by categories of contractors

14
In Japan, the scale of private forestry contractors is relatively small. According to the Census of Agriculture and Forestry in 2010, 83% of private forestry contractors produce only less than 5,000 m³ per year (Fig.4-3).

In some regions, both forestry contractors and civil engineering companies cooperatively conduct forestry practices and construct forest road network. Such movements could contribute to the assurance of forestry workers and revitalization of economy in rural mountain communities.

### 1.4. Forestry workforce

The number of forestry workforce has been declining, reaching 47,000 in 2005. Although the share of aged workforce (aged 65 or older) is as high as 26%, the ratio of young workforce (aged 35 or younger) is on the rise.

The Forestry Agency is conducting the “Green Employment” project, which educates introductory skills and knowledge of forestry to the new entrants to forestry. Thanks to the project, the number of new entrants into forestry was 3,964 in 2009, or 18% increase from the previous year (Fig.4-4).

The Forestry Agency also revised the “Fundamental Policy for Ensuring Forestry Workforce” in 2010, which promotes career development of forestry workforce.
2. Forestry Revitalization Projects

2.1. Effective and stable forestry management

For the improvement of productivity in forestry, “coordination and consolidation of forestry practices” is very important. Such activities will coordinate a number of small forest owners and conduct forestry practices in a large scale.

In particular, the Forestry Agency promotes the “proposal-based coordination and consolidation of forestry practices” in which private forestry contractors propose consolidated forestry practices to multiple forest owners.

In 2011, the Forestry Agency introduced the “forest management and environmental conservation direct payment system,” in order to directly support forest owners and contractors who will conduct consolidated forest management in large scale. The system also support forestry practices including thinning for wood use and development of forest road network (Fig.4-5).

Further, the Forestry Agency established the standards of the “wood transportation road” for truck and the “log salvage road” for forestry machines, for the acceleration of the development of “durable and simple forest road network.”

![Fig.4-5: “Forest management and environmental conservation direct support system”](image)

2.2. Human resource development

In 2010, the Forestry Agency developed the fundamental policy of human resource development, the “Human Resource Development Master Plan,” for the development of human resources with special knowledge and skills necessary for the promotion of coordination and consolidation of forestry practices.

Since 2007, the Forestry Agency has been implementing the training course for the “forestry practice planners,” who will draft the “forestry practice proposal” and develop consensus among many forest owners.

In 2011, the Agency initiated a training course for the development of “Foresters” who will plan and advise local forestry activities. The certification program of “Foresters” will start from 2013.
3. Rural Mountain Communities

3.1. Current situation

The rural mountain communities cover 50% of total land area, or 60% of total forest area, in Japan. However, living infrastructure is underdeveloped and population continues to decline and become older in those areas (Fig.4-6). In such areas, public benefits of forests might be adversely affected due to the lack of proper forest management.

Those areas need to be maintained through forestry production activities for the fulfillment of multi functional roles of forests.

3.2. Revitalization of Rural Mountain Communities

In order to maintain the community function of rural mountain communities, promotion of settlements from urban areas, improvement of community infrastructures, and creation of job opportunities are important. To this end, the Forestry Agency promotes communication between rural mountain communities and urban areas, and supports settlement initiatives through the creation of job opportunities in new businesses utilizing forest resources.

In April 2009, the “Support Center for Revitalization of Mountainous Areas” was established, with the objective to enhance the communication between mountainous communities and urban business enterprises, through matching needs of both sides. Such communications are expected to become popular through CSR activities by private companies, based upon the accomplishments of the Center.

Case study: Matching between urban business enterprises and mountainous communities by the “Support Center for Revitalization of Mountainous Areas”

The major copy machine maker “C” conducted the “offset” of the CO₂ emission from their production activities with the credit produced from forest management activities, as a part of its corporate social responsibility (CSR) activities.
Chapter V  Wood Demand/Supply and 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 on the rise in the long term. However, in 2009, the volume of industrial roundwood consumption declined to 1.4 billion m$^3$, or 8% drop from the previous year, due to the global financial crisis beginning in autumn 2008.

As for the world wood trade, China increased imports of industrial roundwood and exports of plywood, while Russia decreased exports of industrial roundwood. These two countries have strong influence on the flow of world wood trade (Fig.5-1,2).

Fig.5-1: World imports of wood products in 1999 and 2009

Fig.5-2: World exports of wood products in 1999 and 2009
1.2. Wood demand and supply in Japan

In 2009, Japan’s wood demand decreased by 19% from the previous year, reaching 63.21 million m³, due to the downturn of economic activity beginning in autumn 2008.

Among the wood supply, the volume of domestic wood decreased by 6%, reaching 17.59 million m³, while that of imported wood decreased by 23%, reaching 45.62 million m³. As a result, the self-sufficiency rate of wood reached as high as 27.8% for 2009 (Fig.5-3).

As for imported wood, the volume of wood imports decreased for all categories in 2009, compared with ten years before. In particular, imports of roundwood from Russia, lumber from Canada, and plywood from Indonesia substantially decreased (Fig.5-4).

**Fig.5-3:** Wood supply and wood sufficiency rates in Japan

**Fig.5-4:** Japan’s imports of wood products in 1999 and 2009
1.3. Wood prices

In 2010, wood prices for all categories significantly increased from the previous year, when those prices sharply dropped by the worldwide economic crisis.

1.4. Wood from responsible forest management

As a measure to promote the use of wood produced from responsible forest management, use of legally produced wood and forest certifications are becoming popular in Japan. However, the ratio of forest certified by certification schemes is still very low in Japan, compared with other developed countries.

1.5. Non-wood forest products

Non-wood forest products include mushrooms, wild vegetables, edible nuts, and charcoals. These products are very important for local economy. In 2009, the value of non-wood forest products production was 28.91 billion yen, 90% of which account for mushrooms. Recently, imports of fresh shiitake mushrooms from China decreased, while its domestic production is on the rise.

2. Wood Products Industry

2.1. Wood products industry

In 2009, the number of new housing starts significantly increased to 810 thousand units from the previous year. The share of wooden structure in new housing starts was 57%.

As for lumber production, large scale mills are becoming dominant. Such mills, which account for only 7% of total number of mills, consume 58% of total material inputs. In addition, the share of domestic wood in total material inputs is also on the rise.

As for plywood production, the share of domestic wood in material input of domestic plywood mills is on the rise, reaching 64% in 2009 (Fig.5-5).

![Fig.5-5: Material inputs for plywood production and share of domestic roundwood](image)

2.2. Use of domestic wood

In response to the improvement of domestic log processing technologies and uncertain situation of wood imports, sawmills and plywood mills are converting their material inputs from imported wood to domestic wood. The situation surrounding domestic wood is drastically changing.

The “New Wood Production Projects” intends to promote stable supply of wood products to major housing companies or local home builders with lower costs. Under this project, the use of domestic wood in the model areas increased from 1.32 million m$^3$ in 2005 to 1.64 million m$^3$ in 2009.
Chapter VI  National Forest Management

1. Roles of National Forests

National Forests cover 30% of total forest area in Japan (Fig.6-1). National Forests have vital roles in providing safety and security with local people, through such multiple functions of forest as prevention of land erosion, alleviation of flood, or mitigation of global warming.

2. Management as “Forests for People”

The National Forest Management is managing and conserving the National Forests under the fundamental principle of “Forests for People,” in order to satisfy various expectations from people in the society.

Each National Forest is categorized into one of three functional types by its expected functions.

The National Forest Management conducts forest management in National Forests for the fulfillment of multi functional roles of forest, including long-term wood production management, multiple storied forest management, or broadleaf forest management.

Almost 90% of National Forests are designated as “conservation forests” under the Forest Law, for the provision of public benefits including land conservation and water resource conservation. In the “conservation forests,” general forest management is allowed with specific limitations for each type of conservation forests. The National Forest Management also conducts “forest conservation works,” such as restoration of devastated forests.

The National Forest Management promotes forest management in cooperation with the private sector. Recently, the National Forest Management is promoting the forest management system with road system and forestry machines, and the establishment of “cooperative forest management area” through cooperation with private forests.

The National Forest Management also provides National Forests to various organizations as their activity fields, such as “forests for students,” “forest for voluntary groups,” or “forests for corporations.” Further, the National Forest Management also nurtures local forest resources used for local cultural ceremonies or local historical wooden buildings, respecting local culture and history.

The National Forest Management is promoting thinning of National Forests to meet the removal target under the Kyoto Protocol. In 2009, the National Forest Management...
conducted 140 thousand hectares of thinning in National Forests (Fig.6-2). The National Forest Management is also promoting wood use in forest civil engineering works.

National Forests have vital roles in the conservation of biodiversity as a network of ecosystems. The National Forest Management designates National Forests with diverse forest ecosystems as “protected forests,” or “green corridor” which connects several “protected forests.”

National Forests play an important role in stable supply of domestic wood, providing approximately 20% of total domestic wood supply. The National Forest Management is promoting stable wood supply through the agreement with major wood processing companies, such as large-scale lumber mills or plywood factories. Such stable wood supply from National Forests would enable those companies to rationalize their processing lines or reduce production costs.

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, and implementing effective forest management through private consignment. As a result, the National Forest Management has been succeeding in keeping financial balance without external borrowing since FY 2004.

The “Forest and Forestry Revitalization Plan” in December 2009 declared to study the reform of the National Forest Management from the Special Account system to the General Account of the Government. Further, the “budget screening” by the Government Revitalization Unit concluded that the Special Account of the National Forest Management to be abolished and incorporated into the General Account. In response to these assessments, the National Forest Management is conducting study on possible revision of the Special Account system of the National Forest Management.
## Appendix

### 1. Forestry-related Fundamental Figures

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

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>GDP</td>
<td>442,781.0</td>
<td>495,165.5</td>
<td>502,989.0</td>
<td>501,734.4</td>
<td>507,364.8</td>
<td>515,520.4</td>
<td>504,377.6</td>
<td>470,906.7</td>
<td></td>
</tr>
<tr>
<td>Forestry</td>
<td>242,838.7</td>
<td>442,781.0</td>
<td>495,165.5</td>
<td>502,989.0</td>
<td>501,734.4</td>
<td>507,364.8</td>
<td>515,520.4</td>
<td>504,377.6</td>
<td></td>
</tr>
<tr>
<td>Forestry / GDP %</td>
<td>0.34</td>
<td>0.15</td>
<td>0.14</td>
<td>0.18</td>
<td>0.09</td>
<td>0.09</td>
<td>0.10</td>
<td>0.09</td>
<td></td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th>Items</th>
<th>2000</th>
<th>2005</th>
<th>2006</th>
<th>2007</th>
<th>2008</th>
<th>2009</th>
</tr>
</thead>
<tbody>
<tr>
<td>GDP</td>
<td>442,781.0</td>
<td>495,165.5</td>
<td>502,989.0</td>
<td>501,734.4</td>
<td>507,364.8</td>
<td>515,520.4</td>
</tr>
<tr>
<td>Forestry</td>
<td>242,838.7</td>
<td>442,781.0</td>
<td>495,165.5</td>
<td>502,989.0</td>
<td>501,734.4</td>
<td>507,364.8</td>
</tr>
<tr>
<td>Forestry / GDP %</td>
<td>0.34</td>
<td>0.15</td>
<td>0.14</td>
<td>0.18</td>
<td>0.09</td>
<td>0.09</td>
</tr>
</tbody>
</table>

#### 3. Gross Forestry Output

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Gross forestry output</td>
<td>977.14</td>
<td>728.14</td>
<td>522.61</td>
<td>322.13</td>
<td>210.23</td>
<td>216.85</td>
<td>225.56</td>
<td>213.30</td>
</tr>
<tr>
<td>Softwood</td>
<td>552.50</td>
<td>436.76</td>
<td>265.33</td>
<td>177.41</td>
<td>183.67</td>
<td>195.18</td>
<td>200.36</td>
<td>196.09</td>
</tr>
<tr>
<td>Japanese Cedar</td>
<td>215.02</td>
<td>187.39</td>
<td>123.76</td>
<td>87.53</td>
<td>92.56</td>
<td>102.88</td>
<td>94.12</td>
<td>81.60</td>
</tr>
<tr>
<td>Hardwood</td>
<td>168.70</td>
<td>86.02</td>
<td>54.72</td>
<td>31.71</td>
<td>32.19</td>
<td>29.38</td>
<td>32.05</td>
<td>29.22</td>
</tr>
<tr>
<td>Wood fuel production</td>
<td>8.26</td>
<td>7.93</td>
<td>6.16</td>
<td>6.09</td>
<td>5.60</td>
<td>5.48</td>
<td>5.05</td>
<td>4.91</td>
</tr>
<tr>
<td>Mashroom production</td>
<td>229.43</td>
<td>218.32</td>
<td>196.89</td>
<td>198.50</td>
<td>207.05</td>
<td>208.30</td>
<td>223.98</td>
<td>220.02</td>
</tr>
<tr>
<td>Forestry by-product</td>
<td>11.32</td>
<td>7.70</td>
<td>5.92</td>
<td>1.96</td>
<td>2.43</td>
<td>2.06</td>
<td>2.55</td>
<td>1.22</td>
</tr>
<tr>
<td>Forestry income produced</td>
<td>702.48</td>
<td>532.91</td>
<td>351.87</td>
<td>245.60</td>
<td>248.59</td>
<td>246.37</td>
<td>241.61</td>
<td>219.30</td>
</tr>
</tbody>
</table>

Source: Ministry of Agriculture, Forestry and Fisheries, "Report of Statistics on Forestry Income Produced"
## 4. Current State of Forest Resources

<table>
<thead>
<tr>
<th>Classification</th>
<th>Total</th>
<th>Standing timber area (canopy cover more than 30%)</th>
<th>Treeless land (canopy cover less than 30%)</th>
<th>Bamboo groves</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Planted forest</td>
<td>Natural forest</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Area</td>
<td>Growing stock</td>
<td>Area</td>
<td>Growing stock</td>
</tr>
<tr>
<td>National forest</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Subtotal</td>
<td>25,097</td>
<td>4,431.74</td>
<td>10,347</td>
<td>2,651.31</td>
</tr>
<tr>
<td></td>
<td>7,623</td>
<td>1,078.27</td>
<td>2,364</td>
<td>423.61</td>
</tr>
<tr>
<td></td>
<td>7,686</td>
<td>1,076.27</td>
<td>2,386</td>
<td>426.82</td>
</tr>
<tr>
<td></td>
<td>14,535</td>
<td>2,863.51</td>
<td>6,724</td>
<td>1,930.60</td>
</tr>
<tr>
<td></td>
<td>46</td>
<td>5.63</td>
<td>12</td>
<td>2.48</td>
</tr>
</tbody>
</table>

|                | Subtotal |                |      |               |      |               |      |
|                | 17,595   |                | 12,823 | 4,687.32 | 8,484   | 1,481.59 | 685   | 0.10 |

|                | Prefecture |                |      |               |      |               |      |
|                | 1,188     | 190.35         | 464  | 100.66        | 667   | 89.68        | 56    | 0.01 |
|                | 2,830     | 484.33         | 1,247 | 294.62       | 1,449  | 189.63       | 128   | 0.08 |
|                | 14,535    | 2,863.51       | 6,724 | 1,930.60     | 7,217  | 932.81       | 445   | 0.10 |
|                | 46        | 5.63           | 12    | 2.48          | 27     | 3.15         | 4     | 0.00 |

**Source:** Forestry Agency

**Note 1:** Figures do not include National Forest.

**Note 2:** Figures refer to the standing timber area defined in the Forest Law Article 5 and 7.2.

---

## 5. Planting Area Classified by Tree Species

<table>
<thead>
<tr>
<th>Year</th>
<th>Total</th>
<th>Softwood</th>
<th>Hardwood</th>
</tr>
</thead>
<tbody>
<tr>
<td>1990</td>
<td>59,030</td>
<td>18,129</td>
<td>24,646</td>
</tr>
<tr>
<td>2000</td>
<td>31,318</td>
<td>8,223</td>
<td>11,574</td>
</tr>
<tr>
<td>2005</td>
<td>25,584</td>
<td>5,216</td>
<td>7,096</td>
</tr>
<tr>
<td>2006</td>
<td>23,872</td>
<td>4,845</td>
<td>5,998</td>
</tr>
<tr>
<td>2007</td>
<td>25,630</td>
<td>5,546</td>
<td>6,205</td>
</tr>
<tr>
<td>2008</td>
<td>23,400</td>
<td>5,171</td>
<td>4,726</td>
</tr>
<tr>
<td>2009</td>
<td>23,032</td>
<td>4,787</td>
<td>5,241</td>
</tr>
</tbody>
</table>

**Source:** Forestry Agency

**Note 1:** Figures do not include National Forest.

**Note 2:** Figures refer to the planting area under trees for multiple storied forest.

## 6. Planted Forest Area Classified by Age Classes

<table>
<thead>
<tr>
<th>Year</th>
<th>I</th>
<th>II</th>
<th>III</th>
<th>IV</th>
<th>V</th>
<th>VI</th>
<th>VII</th>
<th>VIII</th>
<th>IX</th>
<th>X</th>
<th>XI</th>
<th>XII</th>
<th>XIII</th>
<th>XIV</th>
<th>XV</th>
<th>XVI</th>
<th>XVII</th>
<th>XVIII</th>
<th>XIX</th>
</tr>
</thead>
<tbody>
<tr>
<td>1985</td>
<td>604</td>
<td>856</td>
<td>1,263</td>
<td>1,691</td>
<td>1,762</td>
<td>1,569</td>
<td>947</td>
<td>337</td>
<td>240</td>
<td>205</td>
<td>178</td>
<td>137</td>
<td>111</td>
<td>83</td>
<td>148</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1989</td>
<td>436</td>
<td>700</td>
<td>943</td>
<td>1,351</td>
<td>1,691</td>
<td>1,762</td>
<td>1,413</td>
<td>777</td>
<td>270</td>
<td>224</td>
<td>183</td>
<td>151</td>
<td>118</td>
<td>93</td>
<td>148</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1994</td>
<td>278</td>
<td>421</td>
<td>699</td>
<td>937</td>
<td>1,336</td>
<td>1,686</td>
<td>1,719</td>
<td>1,388</td>
<td>735</td>
<td>262</td>
<td>213</td>
<td>172</td>
<td>139</td>
<td>112</td>
<td>66</td>
<td>105</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2001</td>
<td>131</td>
<td>226</td>
<td>350</td>
<td>589</td>
<td>974</td>
<td>1,149</td>
<td>1,599</td>
<td>1,677</td>
<td>1,522</td>
<td>946</td>
<td>353</td>
<td>204</td>
<td>171</td>
<td>144</td>
<td>112</td>
<td>66</td>
<td>70</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2009</td>
<td>88</td>
<td>158</td>
<td>207</td>
<td>326</td>
<td>563</td>
<td>873</td>
<td>1,174</td>
<td>1,529</td>
<td>1,484</td>
<td>950</td>
<td>345</td>
<td>204</td>
<td>168</td>
<td>141</td>
<td>104</td>
<td>60</td>
<td>100</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Source:** Forestry Agency

**Note 1:** Class XV contains the forests over it in 1985, class XVII contains the forests over it in 1989 and 1994, and class XIX contains the forests over it in 2001 and 2006.

**Note 2:** Figures refer to the standing timber area defined in the Forest Law Article 5 and 7.2.
7. Thinned Area and Use of Thinned Wood

<table>
<thead>
<tr>
<th>Year</th>
<th>Total Private and Public Forest</th>
<th>National Forest</th>
<th>Total Subtotal</th>
<th>Saw m3 Wood</th>
<th>Roundwood</th>
<th>Others</th>
<th>National Forest</th>
</tr>
</thead>
<tbody>
<tr>
<td>2007</td>
<td>521</td>
<td>395</td>
<td>126</td>
<td>5.37</td>
<td>3.44</td>
<td>2.14</td>
<td>0.47</td>
</tr>
<tr>
<td>2008</td>
<td>549</td>
<td>434</td>
<td>114</td>
<td>5.86</td>
<td>3.88</td>
<td>2.26</td>
<td>0.39</td>
</tr>
<tr>
<td>2009</td>
<td>586</td>
<td>446</td>
<td>140</td>
<td>6.37</td>
<td>4.23</td>
<td>2.57</td>
<td>0.48</td>
</tr>
</tbody>
</table>

Source: Forestry Agency
Note: Used volume is in log equivalent.

8. Forest Area by Owners

<table>
<thead>
<tr>
<th>Year</th>
<th>Total</th>
<th>Private</th>
<th>Public</th>
<th>Prefecture</th>
<th>Public Corporation</th>
<th>Municipality</th>
<th>Property Ward</th>
<th>Japan Green Resources Agency</th>
</tr>
</thead>
<tbody>
<tr>
<td>1990</td>
<td>17,627,335</td>
<td>13,590,186</td>
<td>3,389,618</td>
<td>277</td>
<td>215</td>
<td>304</td>
<td>341</td>
<td>312</td>
</tr>
<tr>
<td>1995</td>
<td>16,822,131</td>
<td>12,622,888</td>
<td>3,199,243</td>
<td>243</td>
<td>186</td>
<td>252</td>
<td>293</td>
<td>256</td>
</tr>
<tr>
<td>2000</td>
<td>15,906,078</td>
<td>11,827,351</td>
<td>3,078,727</td>
<td>256</td>
<td>188</td>
<td>260</td>
<td>287</td>
<td>260</td>
</tr>
<tr>
<td>2002</td>
<td>15,086,827</td>
<td>11,326,598</td>
<td>3,760,229</td>
<td>270</td>
<td>200</td>
<td>270</td>
<td>270</td>
<td>270</td>
</tr>
<tr>
<td>2003</td>
<td>14,286,875</td>
<td>10,901,901</td>
<td>3,384,974</td>
<td>248</td>
<td>175</td>
<td>250</td>
<td>250</td>
<td>250</td>
</tr>
<tr>
<td>2005</td>
<td>12,778,075</td>
<td>9,791,700</td>
<td>2,986,375</td>
<td>199</td>
<td>135</td>
<td>199</td>
<td>199</td>
<td>199</td>
</tr>
<tr>
<td>2006</td>
<td>12,098,075</td>
<td>9,231,700</td>
<td>2,866,375</td>
<td>184</td>
<td>120</td>
<td>184</td>
<td>184</td>
<td>184</td>
</tr>
</tbody>
</table>

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

Source: MAFF "2010 Census of Agriculture and Forestry"

9. Number of Forest Owners and their Forest Area

<table>
<thead>
<tr>
<th>Type</th>
<th>0-5ha</th>
<th>5-20ha</th>
<th>20-50ha</th>
<th>50-100ha</th>
<th>100ha-</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total</td>
<td>1,130,997</td>
<td>5,173,928</td>
<td>1,302</td>
<td>1,340</td>
<td>1,649</td>
</tr>
<tr>
<td>Private</td>
<td>945,472</td>
<td>4,379,392</td>
<td>1,062</td>
<td>1,186</td>
<td>1,456</td>
</tr>
<tr>
<td>Public</td>
<td>185,485</td>
<td>828,562</td>
<td>160</td>
<td>254</td>
<td>203</td>
</tr>
</tbody>
</table>

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

Source: MAFF "2010 Census of Agriculture and Forestry"
10. Log Production

(1,000ha, %)

<table>
<thead>
<tr>
<th>Year</th>
<th>Subtotal</th>
<th>Japanese Cedar (Sugi)</th>
<th>Japanese Larch (Karamatsu), Yeddo spruce (Ezomatsu), Todomatsu (Abies sachalinensis)</th>
<th>Red pine (Akamatsu), Black pine (Kuromatu)</th>
<th>Others</th>
</tr>
</thead>
<tbody>
<tr>
<td>1990</td>
<td>21,242</td>
<td>17,034</td>
<td>811</td>
<td>783</td>
<td>232</td>
</tr>
<tr>
<td>1995</td>
<td>16,609</td>
<td>14,017</td>
<td>786</td>
<td>635</td>
<td>204</td>
</tr>
<tr>
<td>2000</td>
<td>16,709</td>
<td>14,975</td>
<td>786</td>
<td>635</td>
<td>204</td>
</tr>
<tr>
<td>2005</td>
<td>17,709</td>
<td>15,162</td>
<td>786</td>
<td>635</td>
<td>204</td>
</tr>
<tr>
<td>2006</td>
<td>16,619</td>
<td>14,975</td>
<td>786</td>
<td>635</td>
<td>204</td>
</tr>
<tr>
<td>2007</td>
<td>17,646</td>
<td>15,162</td>
<td>786</td>
<td>635</td>
<td>204</td>
</tr>
<tr>
<td>2008</td>
<td>16,575</td>
<td>14,975</td>
<td>786</td>
<td>635</td>
<td>204</td>
</tr>
<tr>
<td>2009</td>
<td>13,978</td>
<td>14,975</td>
<td>786</td>
<td>635</td>
<td>204</td>
</tr>
</tbody>
</table>

Note 1: Figures in parentheses refer to the percentage of total volume.
Note 2: Figures in <> refer to the percentage of the volume for Sawmill.
Note 3: Figures for the total may not agree with the sum of the each item due to the rounding-off in calculation.

11. Wood Supply/Demand Chart (in log equivalent)

(1,000m³)

Source: MAFF "Wood Demand and Supply Chart", "Timber Statistics"
### 12. Wood Supply/Demand (in log equivalent)

#### (1,000m³)

<table>
<thead>
<tr>
<th>Year</th>
<th>Total supply/demand of wood</th>
<th>Wood for industrial use</th>
<th>Wood for fuel</th>
<th>Wood for mushroom cultivation</th>
<th>Wood (industrial use) demand</th>
<th>Wood supply</th>
<th>Self-sufficiency rate(%)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>56,265</td>
<td>45,278</td>
<td>10,987</td>
<td></td>
<td>4,019</td>
<td>2,110</td>
<td>81.5</td>
</tr>
</tbody>
</table>

#### Year-on-year rate(%)

<table>
<thead>
<tr>
<th>Year</th>
<th>Total wood supply/demand</th>
<th>Wood for industrial use</th>
<th>Wood for fuel</th>
<th>Wood for mushroom cultivation</th>
<th>Wood supply</th>
<th>Self-sufficiency rate(%)</th>
</tr>
</thead>
</table>

#### Domestic/Imported Wood Supply/Demand (in log equivalent)

#### (1,000m³)

<table>
<thead>
<tr>
<th>Year</th>
<th>Total wood supply/demand</th>
<th>Wood for industrial use</th>
<th>Wood for fuel</th>
<th>Wood for mushroom cultivation</th>
<th>Wood supply</th>
<th>Self-sufficiency rate(%)</th>
</tr>
</thead>
</table>

#### Year-on-year rate(%)

<table>
<thead>
<tr>
<th>Year</th>
<th>Total wood supply/demand</th>
<th>Wood for industrial use</th>
<th>Wood for fuel</th>
<th>Wood for mushroom cultivation</th>
<th>Wood supply</th>
<th>Self-sufficiency rate(%)</th>
</tr>
</thead>
</table>

Source: Forestry Agency "Wood Demand and Supply Chart"

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

Note 2: "Self-sufficiency rate(%)" = "Domestic Wood Supply" / "Total Wood Supply" ×100

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

Note 4: Figures in parentheses refer to the volume of pulp and chips from sawmill residue or construction waste, and the volume is included in that of sawn wood or plywood or others.

Note 5: Figures for the total may not agree with the sum of the each item due to the rounding-off in calculation.

---

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

#### (1,000m³)

<table>
<thead>
<tr>
<th>Year</th>
<th>Total wood supply/demand</th>
<th>Wood for industrial use</th>
<th>Wood for fuel</th>
<th>Wood for mushroom cultivation</th>
<th>Wood supply</th>
<th>Self-sufficiency rate(%)</th>
</tr>
</thead>
</table>

#### Year-on-year rate(%)

<table>
<thead>
<tr>
<th>Year</th>
<th>Total wood supply/demand</th>
<th>Wood for industrial use</th>
<th>Wood for fuel</th>
<th>Wood for mushroom cultivation</th>
<th>Wood supply</th>
<th>Self-sufficiency rate(%)</th>
</tr>
</thead>
</table>

Source: Forestry Agency "Wood Demand and Supply Chart"

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

Note 2: "Self-sufficiency rate(%)" = "Domestic Wood Supply" / "Total Wood Supply" ×100

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

Note 4: Figures in parentheses refer to the volume of pulp and chips from sawmill residue or construction waste, and the volume is included in that of sawn wood or plywood or others.

Note 5: Figures for the total may not agree with the sum of the each item due to the rounding-off in calculation.

---

27
### 14. Wood Supply by Country (in log equivalent)

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>North America</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Subtotal</td>
<td>(35.0%)</td>
<td>(34.2%)</td>
<td>(28.9%)</td>
<td>(18.8%)</td>
<td>(19.0%)</td>
<td>(17.3%)</td>
<td>(17.9%)</td>
<td>(18.2%)</td>
</tr>
<tr>
<td>U.S.</td>
<td>27,479</td>
<td>23,273</td>
<td>14,480</td>
<td>8,440</td>
<td>6,847</td>
<td>6,747</td>
<td>6,316</td>
<td>6,291</td>
</tr>
<tr>
<td>Canada</td>
<td>11,383</td>
<td>14,987</td>
<td>14,240</td>
<td>9,285</td>
<td>9,754</td>
<td>7,904</td>
<td>7,657</td>
<td>6,330</td>
</tr>
<tr>
<td><strong>Southeast Asia</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Subtotal</td>
<td>(18.4%)</td>
<td>(14.7%)</td>
<td>(13.7%)</td>
<td>(12.2%)</td>
<td>(12.2%)</td>
<td>(10.3%)</td>
<td>(9.8%)</td>
<td>(9.6%)</td>
</tr>
<tr>
<td>Malaysia</td>
<td>20,475</td>
<td>16,418</td>
<td>13,569</td>
<td>10,511</td>
<td>10,606</td>
<td>8,517</td>
<td>7,632</td>
<td>6,041</td>
</tr>
<tr>
<td>Indonesia</td>
<td>5,618</td>
<td>6,334</td>
<td>5,858</td>
<td>4,137</td>
<td>3,556</td>
<td>2,777</td>
<td>2,419</td>
<td>2,079</td>
</tr>
<tr>
<td>Others</td>
<td>1,468</td>
<td>2,482</td>
<td>1,021</td>
<td>486</td>
<td>460</td>
<td>455</td>
<td>253</td>
<td>207</td>
</tr>
<tr>
<td><strong>Europe</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>New Zealand</td>
<td>(6.0%)</td>
<td>(6.4%)</td>
<td>(7.5%)</td>
<td>(6.8%)</td>
<td>(6.9%)</td>
<td>(6.1%)</td>
<td>(4.9%)</td>
<td>(3.9%)</td>
</tr>
<tr>
<td>Others</td>
<td>6,661</td>
<td>7,131</td>
<td>7,429</td>
<td>7,411</td>
<td>7,705</td>
<td>6,712</td>
<td>3,795</td>
<td>2,449</td>
</tr>
<tr>
<td>Russia</td>
<td>(0.5%)</td>
<td>(2.2%)</td>
<td>(4.7%)</td>
<td>(6.5%)</td>
<td>(7.5%)</td>
<td>(6.9%)</td>
<td>(5.5%)</td>
<td>(6.9%)</td>
</tr>
<tr>
<td><strong>Others</strong></td>
<td>606</td>
<td>2,411</td>
<td>4,675</td>
<td>5,937</td>
<td>5,668</td>
<td>4,324</td>
<td>3,795</td>
<td>2,449</td>
</tr>
</tbody>
</table>

Note 1: Figures refer to sum of domestic/imported roundwood and imported products (sawnwood, plywood, and pulp and chips) in log equivalent.

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

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

#### Sawmills

<table>
<thead>
<tr>
<th>Type</th>
<th>Unit 1990</th>
<th>Unit 1995</th>
<th>Unit 2000</th>
<th>Unit 2005</th>
<th>Unit 2006</th>
<th>Unit 2007</th>
<th>Unit 2008</th>
<th>Unit 2009</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of sawmills</td>
<td>16,811</td>
<td>14,565</td>
<td>11,692</td>
<td>9,011</td>
<td>8,482</td>
<td>7,905</td>
<td>7,378</td>
<td>6,865</td>
</tr>
<tr>
<td>Sawmills shipments</td>
<td>9,011</td>
<td>12,825</td>
<td>12,554</td>
<td>11,634</td>
<td>10,884</td>
<td>10,684</td>
<td>9,291</td>
<td>8,665</td>
</tr>
<tr>
<td>Plywood</td>
<td>200</td>
<td>450</td>
<td>354</td>
<td>271</td>
<td>281</td>
<td>248</td>
<td>233</td>
<td>205</td>
</tr>
<tr>
<td>Input for plywood</td>
<td>1,000</td>
<td>9,393</td>
<td>7,321</td>
<td>5,406</td>
<td>6,316</td>
<td>5,322</td>
<td>4,816</td>
<td>4,296</td>
</tr>
<tr>
<td>Common plywood</td>
<td>1,000</td>
<td>3,218</td>
<td>3,121</td>
<td>3,314</td>
<td>3,073</td>
<td>2,852</td>
<td>2,688</td>
<td>2,568</td>
</tr>
<tr>
<td>Special plywood</td>
<td>1,000</td>
<td>997,693</td>
<td>655,799</td>
<td>534,534</td>
<td>486,392</td>
<td>432,650</td>
<td>395,234</td>
<td>362,524</td>
</tr>
</tbody>
</table>


### 16. Number of Sawmills and Sawmill Employees

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of sawmills</td>
<td>16,811</td>
<td>14,565</td>
<td>11,692</td>
<td>9,011</td>
<td>8,482</td>
<td>7,905</td>
<td>7,378</td>
<td>6,865</td>
</tr>
<tr>
<td>Hypothetical sawmills</td>
<td>2,106</td>
<td>1,394</td>
<td>1,137</td>
<td>899</td>
<td>882</td>
<td>823</td>
<td>790</td>
<td>799</td>
</tr>
<tr>
<td>Laminated w ood</td>
<td>3,791</td>
<td>3,371</td>
<td>2,635</td>
<td>1,919</td>
<td>1,841</td>
<td>1,666</td>
<td>1,501</td>
<td>1,413</td>
</tr>
<tr>
<td>Special sawmills</td>
<td>7,503</td>
<td>5,472</td>
<td>4,406</td>
<td>3,371</td>
<td>3,111</td>
<td>2,861</td>
<td>2,628</td>
<td>2,309</td>
</tr>
<tr>
<td>150-300.000</td>
<td>1,325</td>
<td>1,233</td>
<td>980</td>
<td>762</td>
<td>754</td>
<td>706</td>
<td>651</td>
<td>649</td>
</tr>
<tr>
<td>300.600.000</td>
<td>533</td>
<td>543</td>
<td>543</td>
<td>488</td>
<td>480</td>
<td>483</td>
<td>469</td>
<td>454</td>
</tr>
<tr>
<td>Number of sawmill employees</td>
<td>124,195</td>
<td>104,197</td>
<td>73,625</td>
<td>49,159</td>
<td>45,389</td>
<td>42,127</td>
<td>38,260</td>
<td>34,970</td>
</tr>
</tbody>
</table>

Source: MAFF "Wood Demand and Supply Report", "Timber Statistics"
Full text (in Japanese) of the “Annual Report on Forest and Forestry for FY2010” is available on the website of the Forestry Agency:


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

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