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The Forest Resources Assessment Programme

Sustainably managed forests have multiple environmental and socio-economic functions important at the global, national and local scales, and play a vital part in sustainable development. Reliable and up-to-date information on the state of forest resources - not only on area and area change, but also on such variables as growing stock, wood and non-wood products, carbon, protected areas, use of forests for recreation and other services, biological diversity and forests' contribution to national economies - is crucial to support decision-making for policies and programmes in forestry and sustainable development at all levels.

FAO, at the request of its member countries, regularly monitors the world's forests and their management and uses through the Forest Resources Assessment Programme. This country report forms part of the Global Forest Resources Assessment 2005 (FRA 2005), which is the most comprehensive assessment to date. More than 800 people have been involved, including 172 national correspondents and their colleagues, an Advisory Group, international experts, FAO staff, consultants and volunteers. Information has been collated from 229 countries and territories for three points in time: 1990, 2000 and 2005.

The reporting framework for FRA 2005 is based on the thematic elements of sustainable forest management acknowledged in intergovernmental forest-related fora and includes more than 40 variables related to the extent, condition, uses and values of forest resources. More information on the FRA 2005 process and the results - including all the country reports - is available on the FRA 2005 Web site (www.fao.org/forestry/fra2005).

The Global Forest Resources Assessment process is coordinated by the Forestry Department at FAO headquarters in Rome. The contact person for matters related to FRA 2005 is:

Mette Løyche Wilkie
Senior Forestry Officer
FAO Forestry Department
Viale delle Terme di Caracalla
Rome 00100, Italy

E-mail: Mette.LoycheWilkie@fao.org

Readers can also use the following e-mail address: fra@fao.org

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The Global Forest Resources Assessment 2005 Country Report Series is designed to document and make available the information forming the basis for the FRA 2005 reports. The Country Reports have been compiled by officially nominated country correspondents in collaboration with FAO staff. Prior to finalisation, these reports were subject to validation by forestry authorities in the respective countries.

Report preparation and contact person

(in case of a Country Correspondent)

This report has been prepared by:

Name: **Mr. Yuji Imaizumi** (National Correspondent to FRA)

Title: Assistant Director

Organization: International Forestry Cooperation Office, Forestry Agency

Address: 1-2-1 Kasumigaseki, Chiyoda-ku, Tokyo, 100-8952 Japan

Tel: +81-3-3591-8449

Fax: +81-3-3593-9565

Email: yuuji_imaizumi@nm.maff.go.jp

Following other professionals were also involved in the reporting process:

Mr. Hiroyasu Oka

Senior Researcher

Department of Forest Policy and Economics

Forestry and Forest Products Research Institute

1 Matsunosato, Tsukuba, Ibaraki, 305-8687 Japan

Tel: +81-29-873-3211 (ext. 641)

Fax: +81-29-873-3799

e-mail: oka@ffpri.affrc.go.jp

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1 Table T1 – Extent of Forest and Other wooded land

1.1 FRA 2005 Categories and definitions

Category	Definition
Forest	Land spanning more than 0.5 hectares with trees higher than 5 meters and a canopy cover of more than 10 percent, or trees able to reach these thresholds <i>in situ</i> . It does not include land that is predominantly under agricultural or urban land use.
Other wooded land	Land not classified as “Forest”, spanning more than 0.5 hectares; with trees higher than 5 meters and a canopy cover of 5-10 percent, or trees able to reach these thresholds <i>in situ</i> ; or with a combined cover of shrubs, bushes and trees above 10 percent. It does not include land that is predominantly under agricultural or urban land use.
Other land	All land that is not classified as “Forest” or “Other wooded land”.
Other land with tree cover (Subordinated to “Other land”)	Land classified as “Other land”, spanning more than 0.5 hectares with a canopy cover of more than 10 percent of trees able to reach a height of 5 meters at maturity.
Inland water bodies	Inland water bodies generally include major rivers, lakes and water reservoirs.

1.2 National data

1.2.1 Data sources

References to sources of information	Quality (H/M/L)	Variable(s)	Year(s)	Additional comments
Forestry Agency “Survey on the State of Forest Resources”	H	Forest, Forest with standing trees, Forest without standing trees, Cut-over land, Understocked land, Bamboo forest	1990 1995 2002	As of 31 March of each year Data do not include figures for the Northern Territories (Habomai Islands, Shikotan Island, Kunashiri Island and Etorofu Island)
National Land Agency ” Digital National Information” (Cited from “Summary of Statistics on National Land, 1999 Version”)	H	Lakes, ponds and river areas	1987	Data do not include figures for the Northern Territories (Habomai Islands, Shikotan Island, Kunashiri Island and Etorofu Island)
Geographical Survey Institute “Nation-wide Survey on Land Area of Prefectures by Municipalities”	H	Total national land area	1990 2000	As of 1 October of each year

1.2.2 Classification and definitions

National class	Definition
Forest	Land on which trees and/or bamboo grow collectively, together with those trees and bamboo, or any other land that are provided for collective growth of trees and/or bamboo. Lands that are utilized mainly for agriculture, residential

	<p>use, or other similar purposes, are not included</p> <p>Forests are classified into the following two categories:</p> <p>(1) National forest: Forest where land is owned by the national government, or where land is owned by other party but the national government implements silviculture under a contract which defines the share of profit between the national government and landowner(s).</p> <p>(2) Private forest: Forest other than national forest, including forests that are owned publicly such as by local/prefectural governments but not by the national government.</p> <p>Lands with trees and/or bamboo are not included in forests if:</p> <p>a) Owned and managed by national government agencies other than the Forestry Agency (since the land is not provided mainly for growing trees and/or bamboo)</p> <p>b) Spanning not more than 0.3 hectares and isolated from adjacent forests</p>
Forest with standing trees	Forest that have canopy cover of 30 percent or higher. Young stands with the degree of stocking of 0.3 or higher are included.
Bamboo forest	Forest that does not fall under “forest with standing tree” and is dominated by bamboo (excluding bamboo grass).
Forest without standing trees	Forest that does not fall under “forest with standing tree” or “bamboo forest”. This category includes areas that are temporarily understocked and are expected to regenerate.
Cut-over land	Forest without standing trees that has gone through final harvest.
Under-stocked land	Forest without standing trees that does not fall under “Cut-over land”.
Total national land area	<p>Land area demarcated by the high-tide shoreline on 1 : 25,000 topographical maps issued by the Geographical Survey Institute. Rivers, lakes and ponds are included in the land area (river is demarcated from the sea with a line connecting both sides of the river mouth, in accordance with the natural topography). Adjustment are made for any increase and/or decrease of land area after the issuance of topographical maps.</p> <p>For Takeshima Island (Shimane Prefecture), figures on the National Property Ledger are counted. For the Northern Territories (Habomai Islands, Shikotan Island, Kunashiri Island and Etorofu Island), figures on the “Nation-wide Survey on Land Area of Municipalities” (Statistics Department of the Cabinet) of 1935 are counted for 1990 data, and figures based on the measurement from 1 : 50,000 topographical maps issued on 1 August 1992 are counted for 2000 data.</p>

1.2.3 Original data

Categories	Area (1000 hectares)				
	1987	1990	1995	2000	2002
Forest		24,950	24,898		24,868
Forest with standing trees		23,643	23,577		23,506
Bamboo forest		149	150		154
Forest without standing trees		1,159	1,171		1,208
Cut-over land		n.a.	131		110
Under-stocked land		¹⁾ 1,159	1,040		1,098
Lakes, ponds and river areas	960				
Total national land area ²⁾	(37,254)	(37,274) 37,774		(37,284) 37,787	

Total may not coincide with the aggregate of individual figures because of the rounding.

Notes:

- 1) For 1990, data can not be divided between “Cut-over land” and “Under-stocked land”. Therefore, the whole figure for “Forest without standing trees” is included in “Under-stocked land”.
- 2) Figures in parentheses () in the “Total national land area” are those excluding the Northern Territories, and those without parentheses include the Northern Territories.

1.3 Analysis and processing of national data

1.3.1 Calibration

Lakes, Ponds and River areas for 1990 and 2000 were calculated as follows:

$$LPR_{1990} = TNLA_{1990} \times (LPR_{1987} / TNLA_{1987})$$

$$LPR_{2000} = TNLA_{2000} \times (LPR_{1987} / TNLA_{1987})$$

where

LPR_{1987} , LPR_{1990} , LPR_{2000} = Lakes, ponds and river areas for years 1987, 1990 and 2000
 $TNLA_{1987}$, $TNLA_{1990}$, $TNLA_{2000}$ = Total national land area (excluding the Northern Territories) for years 1987, 1990 and 2000

1.3.2 Estimation and forecasting

- (1) Forest area for 2000 was estimated by a simple proportional interpolation of data for 1995 and 2002, i.e.,

$$E_{2000} = D_{1995} \times 2 / 7 + D_{2002} \times 5 / 7$$

where

$$E_{2000} = \text{Estimation for year 2000}$$

$$D_{1995}, D_{2002} = \text{Data for years 1995 and 2002}$$

- (2) Forest area for 2005 was forecasted to be the same as the figure of year 2002 since the Basic Plan on Forest and Forestry (formulated in 2001) stipulates that the forest area of Japan shall be maintained at 2000 level for the foreseeable future.
- (3) Total National Land Area for 2005 was forecasted to be the same as the figure of year 2000.

1.4 Reclassification into FRA 2005 classes

FRA 2005 Categories	
Forest	“Forest” as per Japan’s definitions
Other wooded land	No figures are presented because of the lack of data.
Other land	TOTAL minus Forest and Inland water bodies
...of which with tree cover	No figures are presented because of the lack of data.
Inland water bodies	Lakes, ponds and river areas as calculated in 1.3.1 above.
TOTAL	Total national land area (excluding the Northern Territories)

1.5 Data for National reporting table T1

A. Without Calibration with FAOSTAT

FRA 2005 Categories	Area (1000 hectares)		
	1990	2000	2005
Forest ¹⁾	24,950	24,876	24,868
Other wooded land ¹⁾	n.a.	n.a.	n.a.
Other land ¹⁾	11,363	11,447	11,455
...of which with tree cover	²⁾	²⁾	²⁾
Inland water bodies ¹⁾	961	961	961

TOTAL ³⁾	(37,274) 37,774	(37,284) 37,787	(37,284) 37,787
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Total may not coincide with the aggregate of individual figures because of the rounding.

Notes:

- 1) Forest, Other wooded land, Other land and Inland water bodies do not include those in the Northern Territories.
- 2) Include study forests (up to 120 thousand hectares) of former national universities which have been privatized in 2004.
- 3) Figures in parentheses () are those excluding the Northern Territories, and those without parentheses include the Northern Territories.

B. After doing Calibration with FAOSTAT

The above table shall be partly modified as below if the “total area of the country” and the “area of Inland water bodies” are matched with data in FAOSTAT by adjusting all the differences in the area of “Other Land”.

FRA 2005 Categories	Area (1000 hectares)		
	(1990)	(2000)	(2005)
Forest ¹⁾	24,950	24,876	24,868
Other wooded land ¹⁾	n.a.	n.a.	n.a.
Other land ²⁾	11,500	11,574	11,582
...of which with tree cover	n.a.	n.a.	n.a.
Inland water bodies ²⁾	1,330	1,330	1,330
TOTAL ²⁾	37,780	37,780	37,780

Notes:

- 1) Forest and Other wooded land do not include those in the Northern Territories.
- 2) Data in FAOSTAT does not specify whether the figure of country area includes the Northern Territories or not. Presumably it does since the figure is close to that of Japan’s national statistics including the Northern Territories. Other land and Inland water bodies therefore seem to include those in the Northern Territories. In addition, figures for Other land would include those of Forest and Other wooded land in the Northern Territories. For this reason, the rate of forest cover in Japan would not be correct if calculated by dividing Forest area by TOTAL area in this table.

1.6 Comments to National reporting table T1

2 Table T2 – Ownership of Forest and Other wooded land

2.1 FRA 2005 Categories and definitions

Category	Definition
Private ownership	Land owned by individuals, families, private co-operatives, corporations, industries, religious and educational institutions, pension or investment funds, and other private institutions.
Public ownership	Land owned by the State (national, state and regional governments) or government-owned institutions or corporations or other public bodies including cities, municipalities, villages and communes.
Other ownership	Land that is not classified either as “Public ownership” or as “Private ownership”.

2.2 National data

2.2.1 Data sources

References to sources of information	Quality (H/M/L)	Variable(s)	Year(s)	Additional comments
Forestry Agency “Survey on the State of Forest Resources”	H	National forest (managed by the Forestry Agency), Publicly-owned forest, Privately-owned forest	1990 1995 2002	As of 31 March of each year Data do not include figures for the Northern Territories (Habomai Islands, Shikotan Island, Kunashiri Island and Etorofu Island)

2.2.2 Classification and definitions

National class	Definition
National Forest (managed by the Forestry Agency)	Forest managed by the Forestry Agency, where: (i) the land is owned by the national government, and (ii) the land is owned by other party but the national government implements silviculture under a contract which defines the share of profit between the national government and landowner(s).
Publicly-owned forest	Forest owned or possessed by local/regional public body as defined under the article 1-3 of the Local Autonomy Law, including Prefectural government, municipal government, special district, communal district, etc., and can be managed by the sole discretion of such public body. This includes land owned by other party (excluding the national government) but any of the above-mentioned public body implement silviculture under a contract which defines the share of profit between the said public body and landowner(s).
Privately-owned forest	Forest that does not fall under “National forest” and “Publicly-owned forest”.

2.2.3 Original data

	Area (1000 hectares)		
	1990	1995	2002
National forest (managed by the Forestry Agency)	7,645	7,647	7,631
Publicly-owned forest	2,700	2,729	2,796
Privately-owned forest	14,597	14,521	14,440
Total	24,950	24,898	24,868

Total may not coincide with the aggregate of individual figures because of the rounding.

2.3 Analysis and processing of national data

2.3.1 Calibration

Not necessary.

2.3.2 Estimation and forecasting

Estimation for 2000 was done with the same method used for the estimation of forest area of 2000 in T1 as described in section 1.3.2 (1).

2.4 Reclassification into FRA 2005 classes

Reclassification (Percentage allocation) FRA 2005 classes

National Classes of ownership	Public ownership	Private ownership	Other or unspecified ownership
Privately-owned forest land (excluding under-stocked land)		100%	
National forest land (managed by Forestry Agency) excluding under-stocked land	100%		
Publicly-owned forest land excluding under-stocked land	100%		

(Note : a. Private ownership: “Privately-owned Forest” as per Japan’s definition, excluding the area of “Under-stocked Land” (“Forest without standing trees” for 1990).

b. Public ownership: Total of “National forest” and “Publicly-owned forest” as per Japan’s definitions, excluding the area of “Under-stocked Land” (“Forest without standing trees” for 1990).

c. Other ownership: Not applicable)

2.5 Data for National reporting table T2

FRA 2005 Categories	Area (1000 hectares)			
	Forest		Other wooded land	
	1990	2000	1990	2000
Private ownership	14,597	14,464	n.a.	n.a.
Public ownership	10,354	10,413	n.a.	n.a.
Other ownership	0	0	n.a.	n.a.
TOTAL	24,950	24,876	n.a.	n.a.

Total may not coincide with the aggregate of individual figures because of the rounding.

2.6 Comments to National reporting table T2

3 Table T3 – Designated function of Forest and Other wooded land

3.1 FRA 2005 Categories and definitions

Types of designation

Category	Definition
Primary function	A designated function is considered to be primary when it is significantly more important than other functions. This includes areas that are legally or voluntarily set aside for specific purposes.
Total area with function	Total area where a specific function has been designated, regardless whether it is primary or not.

Designation categories

Category / Designated function	Definition
Production	Forest / Other wooded land designated for production and extraction of forest goods, including both wood and non-wood forest products.
Protection of soil and water	Forest / Other wooded land designated for protection of soil and water.
Conservation of biodiversity	Forest / Other wooded land designated for conservation of biological diversity.
Social services	Forest / Other wooded land designated for the provision of social services.
Multiple purpose	Forest / Other wooded land designated to any combination of: production of goods, protection of soil and water, conservation of biodiversity and provision of social services and where none of these alone can be considered as being significantly more important than the others.
No or unknown function	Forest / Other wooded land for which a specific function has not been designated or where designated function is unknown.

3.2 National data

3.2.1 Data sources

References to sources of information	Quality (H/M/L)	Variable(s)	Year(s)	Additional comments
Forestry Agency working document	H	Private forest designated as Protection Forest with logging prohibited	2000 2004	As of 31 March of each year
Forestry Agency "National Forest Management Statistics"	H	National forest designated as "Forest for the Harmony of Forests and People - Nature Conservation Type"	2000 2003	As of 1 April of each year

3.2.2 Classification and definitions

National class	Definition
Forest	Same as in section 1.5 under T1.
Private forest designated as Protection Forest with logging prohibited	Private forest (refer to section 1.2.2 for definition) that is designated as Protection Forest under the Forest Law, and where logging is prohibited in the Designated Management Prescriptions
National forest designated as “Forest for the Harmony of Forests and People - Nature Conservation Type”	National forest (refer to section 1.2.2 for definition) that is designated as “Forest for the Harmony of Forests and People - Nature Conservation Type” in National Forest Management Implementation Plans effective 1 April of each year, excluding under-stocked land (refer to section 1.2.2 for definition)

3.2.3 Original data

Categories	Area (1000 hectares)			
	1990	2000	2003	2004
Forest (From T1)	24,950	24,876		
of which private forest designated as Protection Forest with logging prohibited	n.a.	33		33
of which national forest designated as “Forest for the Harmony of Forests and People – Nature Conservation Type”	n.a.	1,071	1,092	

3.3 Analysis and processing of national data

3.3.1 Calibration

Not necessary.

3.3.2 Estimation and forecasting

- (1) Figures for forest area of 1990, 2000 and 2005 were cited from section 1.5 under T1.
- (2) Forecasting of forest area that should be excluded from “Production” (refer to section 3.4 (2) below) in 2005, i.e., Private forest designated as Protection Forest with logging prohibited and national forest designated as “Forest for the Harmony of Forests and People - Nature Conservation Type”, was done by a simple proportional extrapolation of data shown in section 3.2.3 above.

3.4 Reclassification into FRA 2005 classes

- (1) Primary function: In Japan, all forests are expected to perform a certain degree of multiple functions. This has been clearly stipulated in the Basic Law on Forest and Forestry which was enacted in 2001. For this reason, any single function shall not be considered to be significantly more important than other functions, basically in all forests in Japan. Therefore, all forests were classified into “Multiple purpose”.
- (2) Total area with function: For the same reason as described in (1) above, basically all forests were counted under all functions. The only exception was “Production”, since forests totally set aside from timber/commodity production, such as those where logging is legally prohibited, should not be included.

In Japan, it is usual that more than one designation are done on a same land. Thus, simple aggregation of data for different designation systems will result in significant over-estimation of the actually designated area. No data exist, however, on how different designations duplicate with each other on each piece of land. Therefore, only the

following two designations were counted here, which are considered to be the most major ones and do not duplicate with each other:

- i. Private forest designated as Protection Forest with logging prohibited,
and
- ii. National forest designated as “Forest for the Harmony of Forests and People - Nature Conservation Type”

Figures could not be presented for 1990 since relevant data do not exist.

3.5 Data for National reporting table T3

FRA 2005 Categories / Designated function	Area (1000 hectares)					
	Primary function			Total area with function		
	1990	2000	2005	1990	2000	2005
Forest						
Production	0	0	0	n.a.	23,772	23,743
Protection of soil and water	0	0	0	24,950	24,876	24,868
Conservation of biodiversity	0	0	0	24,950	24,876	24,868
Social services	0	0	0	24,950	24,876	24,868
Multiple purpose	24,950	24,876	24,868	not appl.	not appl.	Not appl.
No or unknown function	0	0	0	not appl.	not appl.	Not appl.
Total - Forest	24,950	24,876	24,868	not appl.	not appl.	not appl.
Other wooded land						
Production	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Protection of soil and water	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Conservation of biodiversity	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Social services	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Multiple purpose	n.a.	n.a.	n.a.	not appl.	not appl.	not appl.
No or unknown function	n.a.	n.a.	n.a.	not appl.	not appl.	not appl.
Total – Other wooded land	n.a.	n.a.	n.a.	not appl.	not appl.	not appl.

3.6 Comments to National reporting table T3

4 Table T4 – Characteristics of Forest and Other wooded land

4.1 FRA 2005 Categories and definitions

Category	Definition
Primary	Forest / Other wooded land of native species, where there are no clearly visible indications of human activities and the ecological processes are not significantly disturbed.
Modified natural	Forest / Other wooded land of naturally regenerated native species where there are clearly visible indications of human activities.
Semi-natural	Forest / Other wooded land of native species, established through planting, seeding or assisted natural regeneration.
Productive plantation	Forest / Other wooded land of introduced species, and in some cases native species, established through planting or seeding mainly for production of wood or non wood goods.
Protective plantation	Forest / Other wooded land of native or introduced species, established through planting or seeding mainly for provision of services.

4.2 National data

4.2.1 Data sources

References to sources of information	Quality (H/M/L)	Variable(s)	Year(s)	Additional comments
Forestry Agency “Survey on the State of Forest Resources”	H	Planted forest, Natural forest	1990 1995 2002	As of 31 March of each year Data do not include figures for the Northern Territories (Habomai Islands, Shikotan Island, Kunashiri Island and Etorofu Island)

4.2.2 Classification and definitions

National class	Definition
Planted forest	Forest with standing trees (refer to section 1.2.2 for definition) established through planting or seeding, with the proportion of standing trees of target species for such planting/seeding consisting 50 percent or higher.
Natural forest	Forest with standing trees other than planted forest
Bamboo forest	Refer to section 1.2.2
Forest without standing trees	Refer to section 1.2.2

4.2.3 Original data

	Area (1000 hectares)		
	1990	1995	2002
Planted forest	10,287	10,356	10,321
Natural forest of 81 years or older	3,764	3,517	4,269
Natural forest of 80 years or younger	9,591	9,704	8,916
Bamboo forest	149	150	154
Forest without standing trees	1,159	1,171	1,208
Total	24,950	24,898	24,868

Total may not coincide with the aggregate of individual figures because of the rounding.

4.3 Analysis and processing of national data

4.3.1 Calibration

Not necessary.

4.3.2 Estimation and forecasting

- (1) Estimation for 2000 was done with the same method used for the estimation of forest area of 2000 in T1 as described in section 1.3.2 (1).
- (2) Forecasting for 2005 was done as follows:

(i) In order to adjust for the shift of age distribution of natural forests, the area of “Natural forest of 81 years or older” in 2005 was forecasted by a simple proportional extrapolation of data for 1995 and 2002, i.e.,

$$E_{2005} = D_{2002} \times 10 / 7 - D_{1995} \times 3 / 7$$

where

E_{2005} = Forecast for year 2005

D_{1995}, D_{2002} = Data for years 1995 and 2002

(ii) The areas of “Planted forest”, “Bamboo forest” and “Forest without standing trees” in 2005 were forecasted to be the same as the figures of year 2002 because of the same reason as stated in Section 1.3.2 (2).

(iii) The area of “Modified natural” was forecasted by subtracting the areas of other classes forecasted in (i) and (ii) above from the total forest area forecasted for 2005 as in T1.

4.4 Reclassification into FRA 2005 classes

- (1) Primary and Modified natural: Natural forest of 81 years or older were counted as “Primary”, and those of 80 years or younger were counted as “Modified natural”. In addition, Bamboo forest and forest without standing trees (cut over land and temporarily under stocked forest) were counted as “Modified natural”.
- (2) Protective plantation: Japan’s planted forests mostly consist of native species, with some introduced planted species. The entire area of planted forests was counted as “Protective plantations” since all of them are expected to perform some degree of protective functions (soil and water conservation, protection of living environment, etc.)
- (3) Productive plantation: Although there are some planted forests with introduced species and managed primarily for production purpose, no data are available on planted forests with introduced species.

4.5 Data for National reporting table T4

FRA 2005 Categories	Area (1000 hectares)					
	Forest			Other wooded land		
	1990	2000	2005	1990	2000	2005
Primary	3 764	4 054	4 591	n.a.	n.a.	n.a.
Modified natural	10 899	10 491	9 955	n.a.	n.a.	n.a.
Semi-natural				n.a.	n.a.	n.a.
Productive plantation	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Protective plantation ¹⁾	10 287	10 331	10 321	n.a.	n.a.	n.a.
TOTAL	24 950	24 876	24 867	n.a.	n.a.	n.a.

Total may not coincide with the aggregate of individual figures because of the rounding.

4.6 Comments to National reporting table T4

According to the provided definitions, planted forests with native species can be classified either as “Semi-natural” or “Protective plantation”. Classification of “Productive plantation” and “Protective plantation” would not be based on the ecological state of the forest but should reflect the management objectives, and thus it is difficult to distinguish with “Semi-natural” in an exclusive manner.

5 Table T5 – Growing stock

5.1 FRA 2005 Categories and definitions

Category	Definition
Growing stock	Volume over bark of all living trees more than X cm in diameter at breast height (or above buttress if these are higher). Includes the stem from ground level or stump height up to a top diameter of Y cm, and may also include branches to a minimum diameter of W cm.
Commercial growing stock	The part of the growing stock of species that are considered as commercial or potentially commercial under current market conditions, and with a diameter at breast height of Z cm or more.

5.2 National data

5.2.1 Data sources

References to sources of information	Quality (H/M/L)	Variable(s)	Year(s)	Additional comments
Forestry Agency “Survey on the State of Forest Resources”	H	Growing stock	1990 1995 2002	As of 31 March of each year Data do not include figures for the Northern Territories (Habomai Islands, Shikotan Island, Kunashiri Island and Etorofu Island)

5.2.2 Classification and definitions

National class	Definition
Growing stock (of standing trees)	Volume of stems, over bark, of all standing trees more than 3 cm in diameter at breast height, above ground up to the end of the stem, but not to include branches. Volume of bamboo stand is not included.

5.2.3 Original data

	Volume (million cubic meters over bark)		
	1990	1995	2002
Growing stock	3,113	3,458	4,013
of which under-stocked land	¹⁾ 2	1	1

Total may not coincide with the aggregate of individual figures because of the rounding.

Note:

- 1) For 1990, data can not be divided between “Cut-over land” and “Under-stocked land”. Therefore, the whole figure for “Forest without standing trees” is included in “Under-stocked land”.

5.3 Analysis and processing of national data

5.3.1 Calibration

Not necessary.

5.3.2 Estimation and forecasting

- (1) Estimation for 2000 was done with the same method used for the estimation of forest area of 2000 in T1 as described in section 1.3.2 (1).

(2) Forecasting for 2005 was done by a simple proportional extrapolation of data for 1995 and 2002, i.e.,

$$E_{2005} = D_{2002} \times 10 / 7 - D_{1995} \times 3 / 7$$

where

E_{2005} = Forecast for year 2005

D_{1995}, D_{2002} = Data for years 1995 and 2002

5.4 Reclassification into FRA 2005 classes

“Growing stock” as per Japan’s definition, excluding that of “Under-stocked land” (“Forest without standing trees” for 1990), was counted as growing stock as per FRA2005 classes. No data exist on commercial growing stock since Japan does not employ such a classification.

5.5 Data for National reporting table T5

FRA 2005 Categories	Volume (million cubic meters over bark)					
	Forest			Other wooded land		
	1990	2000	2005	1990	2000	2005
Growing stock	3,111	3,853	4,249	n.a.	n.a.	n.a.
Commercial growing stock	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.

Specification of country threshold values	Unit	Value	Complementary information
1. Minimum diameter at breast height of trees included in Growing stock (X)	cm	3	
2. Minimum diameter at the top end of stem (Y) for calculation of Growing stock	cm	0	
3. Minimum diameter of branches included in Growing stock (W)	cm	n.a.	Branches are not included
4. Minimum diameter at breast height of trees in Commercial growing stock (Z)	cm	n.a.	
5. Volume refers to “Above ground” (AG) or “Above stump” (AS)	AG / AS	AG	
6. Have any of the above thresholds (points 1 to 4) changed since 1990	Yes/No	No	
7. If yes, then attach a separate note giving details of the change	Attachment		

5.6 Comments to National reporting table T5

Regarding “Commercial growing stock”, most of Japan’s forests can be considered to be potentially commercial, since logging can be legally carried out in most of the forests even if some degree of restriction is imposed based on a certain law. However, considering the current market conditions, the area of forest that can be commercial is quite limited. In any case, it is difficult to accurately estimate such area.

6 Table T6 – Biomass stock

6.1 FRA 2005 Categories and definitions

Category	Definition
Above-ground biomass	All living biomass above the soil including stem, stump, branches, bark, seeds, and foliage.
Below-ground biomass	All living biomass of live roots. Fine roots of less than 2mm diameter are excluded because these often cannot be distinguished empirically from soil organic matter or litter.
Dead wood biomass	All non-living woody biomass not contained in the litter, either standing, lying on the ground, or in the soil. Dead wood includes wood lying on the surface, dead roots, and stumps larger than or equal to 10 cm in diameter or any other diameter used by the country.

6.2 National data

6.2.1 Data sources

- (1) Biomass stock is not directly measured and thus such data do not exist. Biomass stock can be estimated by multiplying the growing stock of forest with standing trees (separately for planted forest and natural forest) by biomass expansion factor and by wood density. It does not include biomass stock in fallen leaves and branches, undergrowth, fallen trees, stumps, and soil and peat.
- (2) Biomass expansion factor and wood density used for estimating biomass stock are based on "National Greenhouse Gas Inventory Report of Japan 2003" which was compiled by National Institute for Environmental Studies Greenhouse Gas Inventory Office (GIO) under the supervision of Ministry of the Environment.

6.2.2 Classification and definitions

National class	Definition
Biomass stock of forest	<p>Biomass stock of trunk, branches and roots of standing trees in the forest (in metric ton), which can be estimated as:</p> $\text{Growing stock of forest (planted and natural) (m}^3\text{)} \times \text{Biomass expansion factor} \times \text{Wood density (t / m}^3\text{ dry matter)}$ <p>Biomass expansion factor is a ratio of the total volume of trunk, branches and roots against trunk volume, excluding leaves. Wood density is the weight of biomass in 1 cubic meter of wood in dry material.</p>

6.2.3 Original data

	Volume (million cubic meters over bark)		
	1990	1995	2002
Growing stock of forest	3,111	3,457	4,012
of which planted forest	1,593	1,887	2,331
of which natural forest	1,519	1,570	1,680

Total may not coincide with the aggregate of individual figures because of the rounding.

Biomass expansion factor and wood density used for estimating biomass stock are as below:

Biomass expansion factor	(Planted forest) 1.7	(Natural forest) 1.9
Wood density	(Planted forest) 0.4 t/m ³	(Natural forest) 0.6 t/m ³

6.3 Analysis and processing of national data

6.3.1 Calibration

Not necessary.

6.3.2 Estimation and forecasting

- (1) Estimation of growing stock of planted forest and natural forest for 2000 was done with the same method used for the estimation of forest area of 2000 in T1 as described in section 1.3.2 (1).
- (2) Biomass stock for 2005 was not forecasted here since biomass expansion factor and wood density are now being reviewed with additional collection of data.

6.4 Reclassification into FRA 2005 classes

Biomass expansion factor is provided only as a ratio of the total volume of trunk, branches and roots against trunk volume. It can not be divided into above- and below-ground parts. Therefore, biomass stock was estimated only for the total of both above and below ground. In addition, dead wood biomass was not estimated because of the lack of data for biomass stock in fallen leaves and branches, undergrowth, fallen trees, stumps, and soil and peat.

6.5 Data for National reporting table T6

FRA 2005 Categories	Biomass (million metric tonnes oven-dry weight)					
	Forest			Other wooded land		
	1990	2000	2005	1990	2000	2005
Above-ground biomass	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Below-ground biomass	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Dead wood biomass	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
TOTAL	2,814	3,379	n.a.	n.a.	n.a.	n.a.

6.6 Comments to National reporting table T6

Supplementary table provided by FAO

The following table represents FAO's estimation of above and below ground biomass and forecasting for 2005, derived by the need to provide global information in a common global format. It does not comprise Japan's country report.

In the table below, total biomass has been split in "Above ground biomass" and "Below ground biomass" biomass by assuming that the GPG (2004) default Root:Shoot (0.24) ratio for tropical region is applicable in Japan. Biomass for 2005 has been forecasted first by deriving the conversion factors (CF) for translating growing stock (GS) into total living biomass for 1990 and 2000 and then applying the average CF to forecast figure for 2005.

FRA 2005 Categories	Biomass (million metric tonnes oven-dry weight)					
	Forest			Other wooded land		
	1990	2000	2005	1990	2000	2005
Above-ground biomass	2,269	2,725	3,052	n.a.	n.a.	n.a.
Below-ground biomass	545	654	733	n.a.	n.a.	n.a.
Dead wood biomass	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
TOTAL	2,814	3,379	3,785	n.a.	n.a.	n.a.

7 Table T7 – Carbon stock

7.1 FRA 2005 Categories and definitions

Category	Definition
Carbon in above-ground biomass	Carbon in all living biomass above the soil, including stem, stump, branches, bark, seeds, and foliage.
Carbon in below-ground biomass	Carbon in all living biomass of live roots. Fine roots of less than 2 mm diameter are excluded, because these often cannot be distinguished empirically from soil organic matter or litter.
Carbon in dead wood biomass	Carbon in all non-living woody biomass not contained in the litter, either standing, lying on the ground, or in the soil. Dead wood includes wood lying on the surface, dead roots, and stumps larger than or equal to 10 cm in diameter or any other diameter used by the country.
Carbon in litter	Carbon in all non-living biomass with a diameter less than a minimum diameter chose by the country for lying dead (for example 10 cm), in various states of decomposition above the mineral or organic soil. This includes the litter, fomic, and humic layers.
Soil carbon	Organic carbon in mineral and organic soils (including peat) to a specified depth chosen by the country and applied consistently through the time series.

7.2 National data

7.2.1 Data sources

- (1) Carbon stock can be estimated by multiplying the biomass stock estimated in T6 by the carbon content of dry matter. It does not include carbon stock in fallen leaves and branches, undergrowth, fallen trees, stumps, and soil and peat.
- (2) Carbon content of dry matter used for estimating carbon stock is based on "National Greenhouse Gas Inventory Report of Japan 2003" which was compiled by National Institute for Environmental Studies Greenhouse Gas Inventory Office (GIO) under the supervision of Ministry of the Environment.

7.2.2 Classification and definitions

National class	Definition
Carbon stock of forest	Estimated as: Biomass stock of forest (t) x Carbon content of dry matter

7.2.3 Original data

Carbon content of dry matter is 0.5 for both planted and natural forests.

7.3 Analysis and processing of national data

7.3.1 Calibration

Not necessary.

7.3.2 Estimation and forecasting

Estimated from biomass stock estimated in T6 for 1990 and 2000. For forecasting of 2005, same applies as T6.

7.4 Reclassification into FRA 2005 classes

For carbon stock in above- and below-ground biomass, same applies as T6 and thus carbon stock was estimated only for the total of both above and below ground biomass. Also same applies as T6 for carbon stock in dead wood biomass.

7.5 Data for National reporting table T7

FRA 2005 Categories	Carbon (Million metric tonnes)					
	Forest			Other wooded land		
	1990	2000	2005	1990	2000	2005
Carbon in above-ground biomass	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Carbon in below-ground biomass	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Sub-total: Carbon in living biomass	1,407	1,689	n.a.	n.a.	n.a.	n.a.
Carbon in dead wood	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Carbon in litter	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Sub-total: Carbon in dead wood and litter	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Soil carbon to a depth of _____ cm	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
TOTAL CARBON	1,407	1,689	n.a.	n.a.	n.a.	n.a.

7.6 Comments to National reporting table T7

Supplementary table provided by FAO

The following table represents FAO's estimation of above and below ground carbon and forecasting for 2005, derived by the need to provide global information in a common global format. It does not comprise Japan's country report.

FRA 2005 Categories	Carbon (Million metric tonnes)					
	Forest			Other wooded land		
	1990	2000	2005	1990	2000	2005
Carbon in above-ground biomass	1,135	1,362	1,526	n.a.	n.a.	n.a.
Carbon in below-ground biomass	272	327	366	n.a.	n.a.	n.a.
Sub-total: Carbon in living biomass	1,407	1,689	1,892	n.a.	n.a.	n.a.
Carbon in dead wood	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Carbon in litter	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Sub-total: Carbon in dead wood and litter	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Soil carbon to a depth of _____ cm	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
TOTAL CARBON	1,407	1,689	1,892	n.a.	n.a.	n.a.

8 Table T8 – Disturbances affecting health and vitality

8.1 FRA 2005 Categories and definitions

Category	Definition
Disturbance by fire	Disturbance caused by wildfire, independently whether it broke out inside or outside the forest/OWL.
Disturbance by insects	Disturbance caused by insect pests that are detrimental to tree health.
Disturbance by diseases	Disturbance caused by diseases attributable to pathogens, such as a bacteria, fungi, phytoplasma or virus.
Other disturbance	Disturbance caused by other factors than fire, insects or diseases.

8.2 National data

8.2.1 Data sources

References to sources of information	Quality (H/M/L)	Variable(s)	Year(s)	Additional comments
Forestry Agency “Handbook of Forestry Statistics”	H	Damage caused by forest fires, designated forest diseases and insects, mammals, and extreme weather events	1988 - 1992 1998 - 2002	

8.2.2 Classification and definitions

National class	Definition
Damage caused by forest fires	Area of forest lost by forest fires
Damage caused by designated biological causes	<p>Area of forest in which trees and/or seedlings are damaged by designated biological causes (as listed below) in accordance with the article 2 of the Forest Disease and Insect Control Law. For (1) only, data are provided in the volume of standing trees damaged.</p> <ol style="list-style-type: none"> Pine nematode (<i>Bursaphelenchus xylophilus</i>) carried by the pine sawyer beetle (<i>Monochamus alternatus</i>) Wood-boring beetles such as ambrosia beetles Pine moth (<i>Dendrolimus spectabilis</i>) Pine needle gall midge (<i>Thecodiplosis japonensis</i>) Cryptomeria needle gall midge (<i>Contarinia inouye</i>) Gypsy moth (<i>Lymantria dispar praetelea</i>) Cryptomeria spider mite (Acarina sp.) Chestnut gall wasp (<i>Dryocosmus kuriphilus</i>) Field mice Shoot blight of larch (<i>Botryosphaeria laricina</i>)
Damage caused by mammals	<p>Area of forest damaged by Japanese Macaque (<i>Maccaca fuscata</i>), field mice, field hare, Japanese serow (<i>Capricornis crispus</i>), Sika deer (<i>Cervus nippon</i>), Wild boar (<i>Sus scrofa</i>), and wild bears (<i>Selenarctos thibetanus</i> and <i>Ursus arctos</i>).</p> <p>Note that field mice are included also in the designated biological causes listed above.</p>
Damage caused by extreme weather events	Area of forest damaged by extreme weather events such as wind, water, snow, drought, frost and saline wind.

8.2.3 Original data

(Unit: 1000 m³ for Pine nematode, 1000 hectares for others)

Categories	88	89	90	91	92	98	99	00	01	02
Damage caused by forest fires	3.2	2.1	1.3	2.7	2.3	0.8	1.0	1.5	1.8	2.6
Damage caused by designated biological causes										
(1) Pine nematode	1,050	915	952	1,161	1,126	760	716	837	912	915
(2) Wood-boring beetles	-	-	-	-	-	-	-	-	-	-
(3) Pine moth	1	1	1	0	0	0.0	0.0	0.0	0.0	0.0
(4) Pine needle gall midge	1	1	1	1	0	0.1	0.0	-	0.0	-
(5) Cryptomeria needle gall midge	1	1	1	1	1	0.0	0.0	-	-	-
(6) Gypsy moth	0	0	0	0	0	0.0	0.0	0.0	0.0	-
(7) Cryptomeria spider mite	2	2	1	1	1	0.0	0.0	0.1	0.0	0.0
(8) Chestnut gall wasp	0	0	0	0	0	-	-	-	-	-
(9) Field mice	1.3	1.4	1.0	0.7	1.2	1.8	0.6	0.3	0.5	0.3
(10) Shoot blight of larch	-	-	-	-	-	-	-	-	-	-
Damage caused by mammals										
(1) Japanese Macaque	0.0	0.0	0.0	0.0	0.0	0.3	0.6	0.7	1.1	0.1
(2) Field mice	(Already presented above)									
(3) Field hare	2.3	2.4	1.7	1.7	1.4	0.7	0.7	0.6	0.6	0.5
(4) Japanese serow	1.8	1.9	2	1.9	1.9	1.3	1.3	1.0	1.3	1.1
(5) Sika deer	2.3	3.1	2.4	2.8	3.1	4.0	3.9	4.6	4.0	4.3
(6) Wild boar	0.2	0.6	0.2	0.3	0.5	0.3	0.4	0.5	0.5	0.4
Damage caused by extreme weather events										
(1) Wind and water	1.0	1.3	6.3	76.6	3.6	13.3	10.4	6.4	0.2	17.1
(2) Snow	9.0	6.1	4.3	6.1	3.0	5.6	7.4	2.0	4.3	14.4
(3) Drought	0.3	1.7	7.0	0.2	0.7	0.0	0.9	6.2	0.6	0.4
(4) Frost	4.1	2.9	0.4	0.3	0.3	0.6	1.6	0.6	0.2	0.2
(5) Saline wind	-	0.1	0.0	1.6	0.0	-	0.0	-	-	0.3

8.3 Analysis and processing of national data

8.3.1 Estimation and forecasting

For figures for 1990 and 2000, five-year average of data for 1988 to 1992 and 1998 to 2002, respectively, were calculated.

8.4 Reclassification into FRA 2005 classes

- (1) Disturbance by fire: “Damage caused by forest fires” as per Japan’s definition was counted.
- (2) Disturbance by insects: Among “Damage caused by designated biological causes” as per Japan’s definitions, those caused by Wood-boring beetles, Pine moth, Pine needle gall midge, Cryptomeria needle gall midge, Gypsy moth and Chestnut gall wasp were counted.

- (3) Disturbance by diseases: Among “Damage caused by designated biological causes” as per Japan’s definitions, those caused by Pine nematode, Cryptomeria spider mite and Shoot blight of larch were counted.
- (4) Other disturbance: “Damage caused by mammals and extreme weather events” as per Japan’s definitions were counted.

8.5 Data for National reporting table T8

FRA-2005 Categories	Average annual area affected (1000 hectares)			
	Forests		Other wooded land	
	1990	2000	1990	2000
Disturbance by fire	2.3	1.5	n.a.	n.a.
Disturbance by insects	2.4	0.0	n.a.	n.a.
Disturbance by diseases ¹⁾	(1,041)	(828)	n.a.	n.a.
	1.4	0.0		
Other disturbance	35.6	26.6	n.a.	n.a.

Note:

- 1) Figures in parentheses () show the volume of standing trees (in 1000 m³) damaged by Pine nematode. Data on the damaged area are not available for Pine nematode.

8.6 Comments to National reporting table T8

9 Table T9 – Diversity of tree species

9.1 FRA 2005 Categories and definitions

Category	Definition
Number of native tree species	The total number of native tree species that have been identified within the country.
Number of critically endangered tree species	The number of native tree species that are classified as “Critically endangered” in the IUCN red list.
Number of endangered tree species	The number of native tree species that are classified as “Endangered” in the IUCN red list.
Number of vulnerable tree species	The number of native tree species that are classified as “Vulnerable” in the IUCN red list.

9.2 National data

9.2.1 Data sources

References to sources of information	Quality (H/M/L)	Variable(s)	Year(s)	Additional comments
Yoshisuke Satake et al. “Japan’s Wild Flora, Tree Species” Volumes I and II	H	Total number of native species of trees, bamboo and palm	1989	ISBN4-582-53504-6 Published in 1989 Number of species cited on this publication was counted.
“Globally threatened tree species of Japan”	H	Species of trees, bamboo and palm that are threatened	1997	www.unep-wcmc.org/trees/Background/ap2.doc A list of threatened species of trees, bamboo and palm drawn from 1997 Red List of Japanese Vascular Plants.
Ministry of the Environment “Red List for Plants”	H	Number of species of trees, bamboo and palm that are classified as extinct in the wild (EW), critically endangered (CR), endangered (EN) and vulnerable (VU)	1997	Issued in 1997. Research had been carried out since 1993. The list of threatened species of trees, bamboo and palm provided in “Globally threatened tree species of Japan” cited above was cross-referenced with this “Red List for Plants” to count the number of species that fall under respective categories of EW, CR, EN and VU.

9.2.2 Classification and definitions

Classification of EW, CR, EN and VU was based on the new IUCN Red List Categories adopted in December 1994.

9.2.3 Original data

Categories	Number of species		
	Trees	Bamboo	Palm
Total number of native species	1,184	139	7
Extinct in the wild (EW)	3	0	0
Critically endangered (CR)	67	0	0
Endangered (EN)	43	0	0
Vulnerable (VU)	85	0	2

9.3 Data for National reporting table T9

FRA 2005 Categories	Number of species (year 2000)
Native tree species ²⁾	1,327
Critically endangered tree species	67
Endangered tree species	43
Vulnerable tree species	87

Notes:

- 1) Number of species include those of bamboo and palm.
- 2) Since the number of species under “EW” is not asked here, the total number of native species does not include those already extinct in the wild.

9.4 Comments to National reporting table T9

10 Table T10 – Growing stock composition

10.1 FRA 2005 Categories and definitions

List of species names (scientific and common names) of the ten most common species.

10.2 National data

10.2.1 Data sources

References to sources of information	Quality (H/M/L)	Variable(s)	Year(s)	Additional comments
Forestry Agency “Survey on the State of Forest Resources”	H	Growing stock	1990 1995 2002	As of 31 March of each year Data do not include figures for the Northern Territories (Habomai Islands, Shikotan Island, Kunashiri Island and Etorofu Island)

10.2.2 Original data

Name of Tree Species			Growing Stock in Forests (million cubic meters)		
Japanese common name	Scientific name	English common name	1990	1995	2002
Sugi	<i>Cryptomeria japonica</i>	Japanese Red Cedar	937	1,093	1,343
Hinoki	<i>Chamaecyparis obtusa</i>	Hinoki Cypress	318	394	500
Matsu group	<i>Pinus spp.</i>	Pine (Japanese Red Pine, Japanese Black Pine, etc.)	332	355	367
Karamatsu	<i>Larix kaempferi</i>	Japanese Larch	154	175	201
Todomatsu	<i>Abies sachalinensis</i>	Sakhalin Fir	122	133	161
Nara group (excluding Kunugi)	<i>Quercus spp.</i> (excluding <i>Quercus acutissima</i> and ever-green species)	Konara Oak, Mongolian Oak, Daimyo Oak, etc.	96	68	89
Yezomatsu and Tohi	<i>Picea jezoensis</i>	Hondo Spruce, Yezo Spruce	55	53	56
Kunugi	<i>Quercus acutissima</i>	Japanese Chestnut Oak	13	13	16
Other broadleaves			988	1,078	1,165
Other conifers			97	95	114
		TOTAL	3,111	3,457	4,012

Total may not coincide with the aggregate of individual figures because of the rounding.

10.3 Analysis and processing of national data

10.3.1 Calibration

Not necessary.

10.3.2 Estimation and forecasting

Estimation for 2000 was done with the same method used for the estimation of forest area of 2000 in T1 as described in section 1.3.2 (1).

10.4 Data for National reporting table T10

FRA 2005 Categories / Species name (Scientific name and common name)		Growing Stock in Forests (million cubic meters)	
		1990	2000
Sugi	<i>Cryptomeria japonica</i>	937	1,272
Hinoki	<i>Chamaecyparis obtusa</i>	318	470
Matsu group	<i>Pinus spp.</i>	332	364
Karamatsu	<i>Larix kaempferi</i>	154	193
Todomatsu	<i>Abies sachalinensis</i>	122	153
Nara group (excluding Kunugi)	<i>Quercus spp.</i> (excluding <i>Quercus acutissima</i> and ever-green species)	96	83
Yezomatsu and Tohi	<i>Picea jezoensis</i>	55	55
Kunugi	<i>Quercus acutissima</i>	13	15
Other broadleaves		988	1,140
Other conifers		97	108
TOTAL		3,111	3,853

10.5 Comments to National reporting table T10

11 Table T11 – Wood removal

11.1 FRA 2005 Categories and definitions

Category	Definition
Industrial wood removal	The wood removed (volume of roundwood over bark) for production of goods and services other than energy production (woodfuel).
Woodfuel removal	The wood removed for energy production purposes, regardless whether for industrial, commercial or domestic use.

11.2 National data

11.2.1 Data sources

References to sources of information	Quality (H/M/L)	Variable(s)	Year(s)	Additional comments
Forestry Agency “Wood Demand and Supply Table”	H	Supply of wood originating in Japan in the forms of industrial wood, wood for Shiitake mushroom cultivation and for woodfuel	1988 - 1992 1998 - 2002	

11.2.2 Classification and definitions

National class	Definition
Industrial wood	Same as Industrial wood as per FAO’s definition, except for wood for growing Shiitake mushroom.
Wood for Shiitake mushroom cultivation	Log used as the bed for cultivating Shiitake mushroom.
Wood for woodfuel	Same as Woodfuel as per FAO’s definition.

11.2.3 Original data

(Unit: Volume of roundwood over bark, 1000 m³)

Category	88	89	90	91	92	98	99	00	01	02
Industrial wood	30,998	30,586	29,367	27,999	27,165	19,331	18,762	18,019	16,757	16,075
Wood for Shiitake mushroom cultivation	1,735	1,616	1,563	1,423	1,374	979	906	803	718	653
Wood for woodfuel	355	372	365	362	371	264	308	233	213	190

11.3 Analysis and processing of national data

11.3.1 Estimation and forecasting

- (1) For figures for 1990 and 2000, five-year average of data for 1988 to 1992 and 1998 to 2002, respectively, were calculated.
- (2) Figure for 2005 was forecasted based on the Long-term Target of Wood Supply stipulated in the “Basic Plan on Forest and Forestry” which was formulated in 2001.

11.4 Reclassification into FRA 2005 classes

“Industrial wood” and “Wood for Shiitake mushroom cultivation” as per Japan’s definitions were counted as Industrial roundwood, and “Wood for woodfuel” was counted as Woodfuel.

11.5 Data for National reporting table T11

FRA 2005 Categories	Volume in 1000 cubic meters of roundwood over bark					
	Forest			Other wooded land		
	1990	2000	2005	1990	2000	2005
Industrial roundwood	30,765	18,601	n.a.	n.a.	n.a.	n.a.
Woodfuel	365	242	n.a.	n.a.	n.a.	n.a.
TOTAL for Country	31,130	18,842	22,334	n.a.	n.a.	n.a.

Total may not coincide with the aggregate of individual figures because of the rounding.

11.6 Comments to National reporting table T11

12 Table T12 – Value of wood removal

12.1 FRA 2005 Categories and definitions

Category	Definition
Value of industrial wood removal	Value of the wood removed for production of goods and services other than energy production (woodfuel).
Value of woodfuel removal	Value of the wood removed for energy production purposes, regardless whether for industrial, commercial or domestic use.

12.2 National data

12.2.1 Data sources

References to sources of information	Quality (H/M/L)	Variable(s)	Year(s)	Additional comments
Ministry of Agriculture, Forestry and Fisheries Statistics Department “Production Forestry Income Statistics Report”	H	Value of wood production (conifers and broadleaves)	1988 - 1992 1998 - 2002	

12.2.2 Classification and definitions

National class	Definition
Value of wood production (conifers and broadleaves)	Calculated by multiplying the amount of wood produced by their prices, all of which are drawn mainly from other existing statistics on forest products. For price of wood, log price at the log yard closest to the forest is used. In the information source “Basic Information on Special Forest Products”, “Wood Production” includes production of both wood and bamboo by definition, but only the value of wood (conifers and broadleaves) are counted here.

12.2.3 Original data

(Unit: 10 million Yen)

分類	88	89	90	91	92	98	99	00	01	02
Value of wood production (conifers)	54,149	57,108	55,250	51,684	47,536	30,514	29,755	26,533	22,693	19,379
Value of wood production (broadleaves)	16,345	16,566	16,870	17,281	15,232	6,521	6,243	5,472	4,501	3,859
TOTAL	70,494	73,674	72,120	68,965	62,768	37,035	35,998	32,005	27,194	23,238

Total may not coincide with the aggregate of individual figures because of the rounding.

12.3 Analysis and processing of national data

12.3.1 Estimation and forecasting

- (1) For figures for 1990 and 2000, the above-cited original data were converted into US Dollars using IMF exchange rates for respective years as provided by FAO, then five-year average of those amounts for 1988 to 1992 and 1998 to 2002 were calculated, respectively.
- (2) For forecasting for 2005, amount of wood removal of 2005 as forecasted in T11 was multiplied by the average log price in 2002 (value of wood production in 2002 cited in

section 12.2.3 divided by the total amount of wood supply in 2002 as cited in T11 section 11.2.3), then converted into US Dollars using IMF exchange rate of 2003 as provided by FAO.

12.4 Reclassification into FRA 2005 classes

Since values of industrial roundwood production and woodfuel production can not be divided, only the total amount was presented.

12.5 Data for National reporting table T12

FRA 2005 Categories	Value of roundwood removal (Million USD)					
	Forest			Other wooded land		
	1990	2000	2005	1990	2000	2005
Industrial roundwood	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Woodfuel	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
TOTAL for Country	5,328.6	2,702.6	2,864.5	n.a.	n.a.	n.a.

Note that the unit has been changed from thousand to million USD.

12.6 Comments to National reporting table T12

13 Table T13 – Non-wood forest product removal

13.1 FRA 2005 Categories and definitions

The following categories of non-wood forest products have been defined:

Category
<u>Plant products / raw material</u>
1. Food
2. Fodder
3. Raw material for medicine and aromatic products
4. Raw material for colorants and dyes
5. Raw material for utensils, handicrafts & construction
6. Ornamental plants
7. Exudates
8. Other plant products
<u>Animal products / raw material</u>
9. Living animals
10. Hides, skins and trophies
11. Wild honey and bee-wax
12. Bush meat
13. Raw material for medicine
14. Raw material for colorants
15. Other edible animal products
16. Other non-edible animal products

13.2 National data

13.2.1 Data sources

References to sources of information	Quality (H/M/L)	Variable(s)	Year(s)	Additional comments
Forestry Agency “Basic Information on Special Forest Products”	H	Production of Matsutake mushroom, Wasabi, Chestnut, Walnut, Wax, Lacquer and Bamboo	1988 - 1992 1998 - 2002	For walnut and chestnut, data include only those collected from wild.

13.2.2 Classification and definitions

13.2.3 Original data

(Unit: 1000 bundles for bamboo, metric tonnes for others)

Items	88	89	90	91	92	98	99	00	01	02
Matsutake mushroom	405.5	456.9	513.0	267.0	187.1	247.3	147.2	181.3	77.9	52.3
Wasabi	3,548.0	4,060.0	3,716.0	3,764.0	4,680.0	4,101.0	3,699.0	4,507.0	4,134.0	4,479.0
Chestnut	468.1	527.3	470.8	400.5	398.4	170.2	174.6	94.9	68.6	74.0
Walnut	104.2	89.7	141.4	136.3	139.6	21.2	21.6	15.5	14.4	9.3
Wax	118.1	105.5	109.0	104.8	84.4	75.5	99.3	107.1	90.9	79.4
Lacquer	4.6	5.0	4.8	5.0	4.8	2.4	2.1	1.8	1.7	1.6
Bamboo	7,024.3	6,861.6	6,822.0	6,568.4	5,798.9	2,866.7	2,262.5	2,007.5	1,859.8	1,477.1

13.3 Analysis and processing of national data

13.3.1 Estimation and forecasting

- For figures for 1990 and 2000, five-year average of data for 1988 to 1992 and 1998 to 2002, respectively, were calculated.
- Figures for 2005 were forecasted to be same as 2002 level, since simple extrapolation of data for recent years will result in negative figures in 2005 for some commodities, which is due to rapid decrease of production of some non-wood forest products in recent years.
- For bamboo, it is estimated that a bundle would weigh approximately 30 kilograms. This figure was used to convert the unit from bundles into kilograms/metric tonnes.

13.4 Reclassification into FRA 2005 classes

1. Food: Matsutake mushroom, Wasabi, Chestnut and Walnut
5. Raw material for utensils, handicrafts & construction: Wax, Lacquer and Bamboo

13.5 Data for National reporting table T13

FRA 2005 Categories	Scale factor	Unit	NWFP removal		
			1990	2000	2005
<u>Plant products / raw material</u>					
1. Food		Metric tonnes	4,895	4,458	4,615
2. Fodder			n.a.	n.a.	n.a.
3. Raw material for medicine and aromatic products			n.a.	n.a.	n.a.
4. Raw material for colorants and dyes			n.a.	n.a.	n.a.
5. Raw material for utensils, handicrafts & construction	30 kg/bundle for bamboo	Metric tonnes	198,560	62,934	44,394
6. Ornamental plants			n.a.	n.a.	n.a.
7. Exudates			n.a.	n.a.	n.a.
8. Other plant products			n.a.	n.a.	n.a.
<u>Animal products / raw material</u>					
9. Living animals			n.a.	n.a.	n.a.
10. Hides, skins and trophies			n.a.	n.a.	n.a.
11. Wild honey and bee-wax			n.a.	n.a.	n.a.
12. Bush meat			n.a.	n.a.	n.a.
13. Raw material for medicine			n.a.	n.a.	n.a.
14. Raw material for colorants			n.a.	n.a.	n.a.
15. Other edible animal products			n.a.	n.a.	n.a.
16. Other non-edible animal products			n.a.	n.a.	n.a.

13.6 Comments to National reporting table T13

14 Table T14 – Value of non-wood forest product removal

14.1 FRA 2005 Categories and definitions

The following categories of non-wood forest products have been defined:

Category
<u>Plant products / raw material</u>
1. Food
2. Fodder
3. Raw material for medicine and aromatic products
4. Raw material for colorants and dyes
5. Raw material for utensils, handicrafts & construction
6. Ornamental plants
7. Exudates
8. Other plant products
<u>Animal products / raw material</u>
9. Living animals
10. Hides, skins and trophies
11. Wild honey and bee-wax
12. Bush meat
13. Raw material for medicine
14. Raw material for colorants
15. Other edible animal products
16. Other non-edible animal products

14.2 National data

14.2.1 Data sources

References to sources of information	Quality (H/M/L)	Variable(s)	Year(s)	Additional comments
Ministry of Agriculture, Forestry and Fisheries Statistics Department “Production Forestry Income Statistics Report”	H	Value of forest secondary products collection (total of Matsutake mushroom, Wasabi, Chestnut and Walnut) and Value of wood production (bamboo)	1988 - 1992 1998 - 2002	
Forestry Agency “Basic Information on Special Forest Products”	H	Price of Wax and Lacquer	1988 - 1992 1998 - 2002	

14.2.2 Classification and definitions

National class	Definition
Value of forest secondary products collection and value of wood production (bamboo)	Calculated by multiplying the amount of forest secondary products collection (Matsutake mushroom, wild Wasabi, wild Chestnut and wild Walnut) and that of wood production (bamboo) by their respective prices, all of which are drawn mainly from other existing statistics on forest

	products. Price at the point of producers' shipment is used for calculation. In the information source "Basic Information on Special Forest Products", "Wood Production" includes production of both wood and bamboo by definition, but only the value of bamboo is counted here.
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14.2.3 Original data

Ministry of Agriculture, Forestry and Fisheries Statistics Department "Production Forestry Income Statistics Report" (Unit: 10 million Yen)

Category	88	89	90	91	92	98	99	00	01	02
Value of forest secondary products collection	984	1,094	1,132	1,069	880	578	496	592	326	248
Value of wood production (bamboo)	657	635	695	684	797	334	260	208	193	141

Forestry Agency "Basic Information on Special Forest Products"

Category	88	89	90	91	92	98	99	00	01	02
Price of wax (Yen / kg)	1,250	1,329	1,688	1,920	2,367	2,983	2,625	2,200	2,400	2,400
Price of lacquer (Yen / kg)	36,389	40,400	44,148	45,266	45,333	38,630	37,903	37,660	36,722	36,518

14.3 Analysis and processing of national data

14.3.1 Estimation and forecasting

- i. For estimation of values,
 - i) For secondary products collection and bamboo, values cited in section 14.2.3 above were used.
 - ii) For wax and lacquer, amount of production for each commodity (shown in section 13.5 under T13) was multiplied by its price (shown in section 14.2.3 above).
- ii. For figures for 1990 and 2000, figures calculated in (1) above were converted into US Dollars using IMF exchange rates for respective years as provided by FAO, then five-year average of those amounts for 1988 to 1992 and 1998 to 2002 were calculated, respectively.
- iii. Figures for 2005 were forecasted to be same as 2002 level, since simple extrapolation of data for recent years will result in negative figures in 2005 for some commodities, which is due to rapid decrease of production of some non-wood forest products in recent years.

14.4 Reclassification into FRA 2005 classes

- (1) 1. Food: Forest secondary products collection (Matsutake mushroom, Wasabi, Chestnut and Walnut)
- (2) 5. Raw material for utensils, handicrafts & construction: Wax, Lacquer and Bamboo

14.5 Data for National reporting table T14

FRA 2005 Categories	Value of the of NWFP removed (1000 USD)		
	1990	2000	2005
<u>Plant products / raw material</u>			
1. Food	78,921	39,095	20,684
2. Fodder	n.a.	n.a.	n.a.
3. Raw material for medicine and aromatic products	n.a.	n.a.	n.a.
4. Raw material for colorants and dyes	n.a.	n.a.	n.a.
5. Raw material for utensils, handicrafts & construction	56,260	22,349	13,822
6. Ornamental plants	n.a.	n.a.	n.a.
7. Exudates	n.a.	n.a.	n.a.
8. Other plant products	n.a.	n.a.	n.a.
<u>Animal products / raw material</u>			
9. Living animals	n.a.	n.a.	n.a.
10. Hides, skins and trophies	n.a.	n.a.	n.a.
11. Wild honey and bee-wax	n.a.	n.a.	n.a.
12. Bush meat	n.a.	n.a.	n.a.
13. Raw material for medicine	n.a.	n.a.	n.a.
14. Raw material for colorants	n.a.	n.a.	n.a.
15. Other edible animal products	n.a.	n.a.	n.a.
16. Other non-edible animal products	n.a.	n.a.	n.a.
TOTAL	135,181	61,444	34,506

Total may not coincide with the aggregate of individual figures because of the rounding.

14.6 Comments to National reporting table T14

15 Table T15 – Employment in forestry

15.1 FRA 2005 Categories and definitions

Category	Definition
Primary production of goods	Employment in activities related to primary production of goods, like industrial roundwood, woodfuel and non-wood forest products.
Provision of services	Employment in activities directly related to services from forests and woodlands.
Unspecified forestry activities	Employment in unspecified forestry activities.

15.2 National data

15.2.1 Data sources

References to sources of information	Quality (H/M/L)	Variable(s)	Year(s)	Additional comments
Statistics and Information Department, Ministry of Agriculture, Forestry and Fisheries "World Census of Agriculture and Forestry"	H	Number of full time forestry workers	1990 2000	As of 1 August of each year The number of workers refers to those who worked on forestry works for 150 days or more within a year preceding the survey date. Employers covered by the survey include: (1) All individuals and enterprises who/which conducted silvicultural work under contract (2) Enterprises which conducted log production of 50 m ³ or more either under contract or by purchasing standing trees within 1 year preceding the survey date. For enterprises which conducted log production only in their own forests, only those owning 10 hectares or more of forest are covered.
Ministry of Internal Affairs and Communications "Population Census"	H	Number of "employees" within the industry classification "forestry" under the following two occupational classifications: (1) Agricultural, forestry and fisheries workers (2) All others	1990 2000	The census covered all persons living in Japan, 15 years or older at the census date, i.e., 1 October of each year, including foreigners except: (1) Foreign diplomatic corps, their suite and their dependents (2) Foreign military personnel including both military corps and civilians, and their dependents Regarding employment, the census covered those who did any work during the week before the census date, i.e., 24 to 30 September of each year, for pay or profit, such as wage, salary, allowance, business profit,

				etc. For further information, refer to: www.stat.go.jp/english/data/kokusei/
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15.2.2 Classification and definitions

National class	Definition
Population Census: Number of “employees” within the industry classification “forestry” under the occupational classification of “Agricultural, forestry and fisheries workers”	Industry classification: “Forestry” in the Standard Industrial Classification for Japan Employment Status: “Employees”, i.e., those employed by a person, a company, a corporation or a government office, etc., that is, office workers, factory workers, public servants, officers of a corporation, employees in a private retail shop, domestic servants, daily or temporary workers, etc. This does not include “Directors” (directors of a company or a corporation including managing directors), “Self-employed”, “Family workers” and “Persons doing home handicraft”. Occupational classification: “Agricultural, forestry and fisheries workers” in the Japan Standard Occupational Classification
Population Census: Number of “employees” within the industry classification “forestry” under the occupational classification of “All others”	Industry classification and employment Status: Same as above Occupational classification: Total of “Professional and technical workers”, “Managers and officials”, “Clerical and related workers”, “Sales workers”, “Service workers”, “Protective service workers”, “Workers in transport and communications occupations”, “Production process workers and labourers” and “Workers not classifiable by occupation” in the Japan Standard Occupational Classification

15.2.3 Original data

Ministry of Agriculture, Forestry and Fisheries “World Census of Agriculture and Forestry”

Categories	Unit: Persons	
	1990	2000
Number of full time forestry workers by major employers (those who worked on forestry works for 150 days or more within a year)	76,970	44,670

Ministry of Internal Affairs and Communications “Population Census”

Categories	Unit: Persons	
	1990	2000
“Employees” - “Forestry” – “Agricultural, forestry and fisheries workers”	46,127	29,166
“Employees” - “Forestry” – “All others”	31,055	18,010
TOTAL	77,182	47,176

Total may not coincide with the aggregate of individual figures because of the rounding.

15.3 Analysis and processing of national data

15.3.1 Estimation and forecasting

Regarding forestry workers who work directly in field works such as planting, silviculture and log production, data of “World Census of Agriculture and Forestry” which cover those worked 150 days or more within a year were used, since the said census covers all forestry employers which fulfil certain conditions.

Regarding workers who do not work directly in field works but conduct technical, managerial and administrative support and services, data of “Population Census” were used, since (i) no other data source exists, although the said census only covers a particular week in the year (i.e., 24 to 30 September), and (ii) it is estimated that such support and services workers are more likely to be employed year-round compared to field workers.

15.4 Reclassification into FRA 2005 classes

- (1) Primary production of goods: Employment of forestry workers who work directly in field works and workers who do not work directly in field works but conduct technical, managerial and administrative support and services are both counted for “Primary production of goods”, since their work is primarily related to growing and harvesting trees in forests.
- (2) Provision of services: The same figure of employment for “Primary production of goods” was also counted as “Provision of services” since significant part of their work is considered to be for facilitating protective functions of forests.

In addition to the above, there should be a range of employment in sectors providing various non-commodity services of forests, such as forest-based recreation and tourism, it is difficult to estimate employment in such sectors because of the lack of data. Therefore, such employment was not estimated and included in this report.

15.5 Data for National reporting table T15

FRA 2005 Categories	Employment (1000 person-years)	
	1990	2000
Primary production of goods ¹⁾	108.0	62.7
Provision of services ¹⁾	(108.0)	(62.7)
Unspecified forestry activities		
TOTAL for Country	108.0	62.7

Total may not coincide with the aggregate of individual figures because of the rounding.

Note 1) Figures for “Provision of services” represent the same employment as those for “Primary production of goods”.

15.6 Comments to National reporting table T15

According to the definition provided by the International Labour Organization (ILO), “employment” should cover not only paid employment but also self-employment which includes unpaid family workers, and thus Japan’s official labour/employment statistics conform with such ILO definition.

In fact, self-employment is a relatively popular form of employment in forestry and should not be neglected in estimating how forests generate employment in any given society. From official data, for instance, paid employees account only less than a half of total forestry employment in Japan. FRA2005 defines employment as only those with contractual relationship with employers, and should be expanded to include self- and family-employees in the future rounds of assessment.

16 Thematic reporting tables

Please refer to the following websites for further information on Japan's forests and forestry.

Annual Reports on Trends of Forest and Forestry (Summary):

www.rinya.maff.go.jp/new/hakusyoeigo/english15/english15top.htm (FY 2003)

www.rinya.maff.go.jp/new/hakusyoeigo/english14/english14top.htm (FY 2002)

www.rinya.maff.go.jp/new/hakusyoeigo/english13/english13top.htm (FY 2001)

www.rinya.maff.go.jp/new/hakusyoeigo/eigohakusyo2.pdf (FY 2000)

Voluntary national reports submitted for UNFF sessions:

www.un.org/esa/forests/pdf/national_reports/unff2/report_2002_japan.pdf (UNFF2, 2002)

www.un.org/esa/forests/pdf/national_reports/unff3/japan.pdf (UNFF3, 2003)

www.un.org/esa/forests/pdf/national_reports/unff4/japan.pdf (UNFF4, 2004)