Forestry Department
Food and Agriculture Organization of the United Nations

GLOBAL FOREST RESOURCES ASSESSMENT 2010

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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 2010 (FRA 2010).

The reporting framework for FRA 2010 is based on the thematic elements of sustainable forest management acknowledged in intergovernmental forest-related fora and includes variables related to the extent, condition, uses and values of forest resources, as well as the policy, legal and institutional framework related to forests. More information on the FRA 2010 process and the results - including all the country reports - is available on the FRA Web site (www.fao.org/forestry/fra).

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 2010 is:

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The Global Forest Resources Assessment Country Report Series is designed to document and make available the information forming the basis for the FRA 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.

Contents

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1 Table T1 – Extent of Forest and Other wooded land

1.1 FRA 2010 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 *in situ*. 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 *in situ*; 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 and Prefectural Governments "National Forest Inventory (NFI)"	H	Forest, Forest with standing trees, Forest without standing trees, Cut-over land, Under-stocked land, Bamboo forest	1990 1995 2002 2007	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).
FAOSTAT	H	Area of inland water bodies	1990 2000 2005	
FAOSTAT	H	Total area of the country	1990 2000 2005	

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 use, or other similar purposes, are not included Forests are classified into the following two categories: (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). (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. Lands with trees and/or bamboo are not included in forests if: 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) b) Spanning not more than 0.3 hectares and isolated from adjacent forests
Forest with standing trees	Forest that has 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 under-stocked 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".

1.2.3 Original data

Categories	**Area (1000 hectares)**				
	1990	**1995**	**2000**	**2002**	**2007**
Forest	24,950	24,898		24,868	24,979
Forest with standing trees	23,643	23,577		23,506	23,637
Bamboo forest	149	150		154	156
Forest without standing trees	1,159	1,171		1,208	1,185
Cut-over land	n.a.	131		110	89
Under-stocked land	1) 1,159	1,040		1,098	1,096
Inland water bodies	1,320		1,330		
Total country area	37,780		37,780		

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".

1.3 Analysis and processing of national data

1.3.1 Calibration

Not necessary.

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} = Estimation for year 2000

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

(2) Forest area for 2005 was estimated by a same simple proportional interpolation of data for 2002 and 2007.

(3) Forest area for 2010 was forecasted to be the same as the figure of year 2007 since the Basic Plan on Forest and Forestry (formulated in 2006) stipulates that the forest area of Japan shall be maintained at 2005 level for the foreseeable future.
(4) Total area of the country and the area of Inland water bodies for 2010 were forecasted to be the same as the figures of year 2005.

1.3.3 Reclassification into FRA 2010 categories

FRA 2005 Categories	National Reporting Classes
Forest	"Forest" as per Japan's definition
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	Same as FAO's definition
TOTAL	Same as FAO's definition

1.4 Data for Table T1

FRA 2010 categories	Area (1000 hectares)			
	1990	2000	2005	2010
Forest	24 950	24 876	24 935	24 979
Other wooded land	0	0	0	0
Other land	11 510	11 574	11 515	11 471
...of which with tree cover	n.a.	n.a.	n.a.	n.a.
Inland water bodies	1 320	1 330	1 341	1 341
Total for country	**37 780**	**37 780**	**37 791**	**37 791**

1.5 Comments to Table T1

Variable / category	Comments related to data, definitions, etc.	Comments on the reported trend
Forest	Forest does not include those in the Northern Territories.	
Other wooded land	Available data do not allow for estimating the area of other wooded land. Any areas of other wooded land are included either under forest or under other land.	
Other land		
Other land with tree cover		
Inland water bodies		

Other general comments to the table
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 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.

Expected year for completion of ongoing/planned national forest inventory and/or RS survey / mapping	
Field inventory	
Remote sensing survey / mapping	

2 Table T2 – Forest ownership and management rights

2.1 FRA 2010 Categories and definitions

Category	Definition
Public ownership	Forest owned by the State; or administrative units of the public administration; or by institutions or corporations owned by the public administration.
Private ownership	Forest owned by individuals, families, private co-operatives, communities, corporations and other business entities, religious and educational institutions, pension or investment funds, NGOs, nature conservation associations and other private institutions.
Individuals *(sub-category of Private ownership)*	Forest owned by individuals and families.
Private business entities and institutions *(sub-category of Private ownership)*	Forest owned by private corporations, co-operatives, companies and other business entities, as well as private non-profit organizations such as NGOs, nature conservation associations, and religious and educational institutions etc.
Local communities *(sub-category of Private ownership)*	Forest owned by a group of individuals belonging to the same community residing within or in the vicinity of a forest area. The community members are co-owners that share exclusive rights and duties, and benefits contribute to the community development.
Indigenous / tribal communities *(sub-category of Private ownership)*	Forest owned by communities of indigenous or tribal people.
Other types of ownership	Other kind of ownership arrangements not covered by the categories above. Also includes areas where ownership is unclear or disputed.
Categories related to the holder of management rights of public forest resources	
Public Administration	The Public Administration (or institutions or corporations owned by the Public Administration) retains management rights and responsibilities within the limits specified by the legislation.
Individuals/households	Forest management rights and responsibilities are transferred from the Public Administration to individuals or households through long-term leases or management agreements.
Private institutions	Forest management rights and responsibilities are transferred from the Public Administration to corporations, other business entities, private co-operatives, private non-profit institutions and associations, etc., through long-term leases or management agreements.
Communities	Forest management rights and responsibilities are transferred from the Public Administration to local communities (including indigenous and tribal communities) through long-term leases or management agreements.
Other form of management rights	Forests for which the transfer of management rights does not belong to any of the categories mentioned above.

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 and Prefectural Governments "National Forest Inventory (NFI)"	H	National forest (managed by the Forestry Agency), Publicly-owned forest, Privately-owned forest	1990 1995 2002 2007	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)
Forestry Agency "National Forest Management Statistics"	H	National forest permit for use by local people	1990 2000 2005	As of 31 March of each year

2.2.2 Classification and definitions

National class	Definition
"National Forest (managed by the Forestry Agency)"	Forest managed by the Forestry Agency, where: (i) land is owned by the national government, and (ii) 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 implements 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".
"National forest permit for use by local people"	Area of national forest permitted for use by local people, including harvest of fuelwood/non-wood forest products and grazing.

2.2.3 Original data

	Area (1000 hectares)			
	1990	**1995**	**2002**	**2007**
National forest (managed by the Forestry Agency)	7,654	7,647	7,631	7,614
Publicly-owned forest	2,700	2,729	2,796	2,830
of which owned by communal districts[2)]	n.a.	n.a.	290	299
Privately-owned forest	14,597	14,521	14,440	14,535
Total	**24,950**	**24,898**	**24,868**	**24,979**

1) Total may not coincide with the aggregate of individual figures because of the rounding.
2) For communal districts, data are not available for 1990 and 1995.

Forestry Agency, "National Forest Management Statistics"

	Area (1000 hectares)		
	1990	**2000**	**2005**
National forest permit for use by local people	1,743	1,533	1,470

2.3 Analysis and processing of national data

2.3.1 Calibration

Not necessary.

2.3.2 Estimation and forecasting

Estimation of the areas of national forest (managed by the Forestry Agency), publicly-owned forest, and privately-owned forest was done as follows:

Figures for 2000 and 2005 were estimated by the same method used for the T1 as described in section 1.3.2 (1) and (2).

2.3.3 Reclassification into FRA 2010 categories

Table 2a

FRA 2005 Categories	National Reporting Classes
Public ownership	・National forest ・Publicly-owned forest excluding those owned by "communal districts"
Private ownership	・Privately-owned forest ・Publicly-owned forest which are owned by "communal districts"

1) Communal districts are part of cities, towns and villages which own properties and classified as municipalities by Local Autonomy Act. Therefore, in Japan, forests owned by them are classified as "publicly" owned.

Table 2b

FRA 2005 Categories	National Reporting Classes
Public administration	Forest area reclassified as "public ownership" as described above minus "area of national forest permit for use by local people"
Communities	"Area of national forest permit for use by local people"

2.4 Data for Table T2

Table 2a - Forest ownership

FRA 2010 Categories	Forest area (1000 hectares)		
	1990	**2000**	**2005**
Public ownership	10,354	10,412	10,142
Private ownership	14,597	14,463	14,793
...of which owned by individuals	14,597	14,463	14,497
...of which owned by private business entities and institutions	n.a.	n.a.	n.a.
...of which owned by local communities	n.a.	n.a.	295
...of which owned by indigenous / tribal communities	n.a.	n.a.	n.a.
Other types of ownership	0	0	0
TOTAL	**24,950**	**24,876**	**24,935**

Note: Total may not coincide with the aggregate of individual figures because of the rounding.
Note: If other types of ownership are reported, please specify details in comment to the table.
Note : "of which owned by individuals" include "of which owned by private business entities and institutions" due to data availability.

Does ownership of trees coincide with ownership of the land on which they are situated?	✓	Yes
		No
If **No** above, please describe below how the two differ:		
In Japan, ownership of trees generally coincides with ownership of the land on which they grow, except for the following: 1) National forest managed by the Forestry Agency, where 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). 2) Publicly-owned forest where land is owned by other party (excluding the national government) but any of the local/regional public body as defined under the article 1-3 of the Local Autonomy Law, including prefectural government, municipal government, special district, etc., implements silviculture under a contract which defines the share of profit between the said public body and landowner(s).		

Table 2b - Holder of management rights of public forests

FRA 2010 Categories	Forest area (1000 hectares)		
	1990	2000	2005
Public Administration	8,611	8,879	8,672
Individuals	0	0	0
Private corporations and institutions	0	0	0
Communities	1,743	1,533	1,470
Other	0	0	0
TOTAL	**10,354**	**10,412**	**10,142**

Note: Although "public forests" include both national forest and other publicly-owned forests owned by local/regional public bodies, only the area of national forest permit for use by local people was counted due to data availability.

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

2.5 Comments to Table T2

Variable / category	Comments related to data, definitions, etc.	Comments on the reported trend
Public ownership		
Private ownership		
Other types of ownership		
Management rights		

Other general comments to the table

3 Table T3 – Forest designation and management

3.1 FRA 2010 Categories and definitions

Term	Definition
Primary designated function	The primary function or management objective assigned to a management unit either by legal prescription, documented decision of the landowner/manager, or evidence provided by documented studies of forest management practices and customary use.
Protected areas	Areas especially dedicated to the protection and maintenance of biological diversity, and of natural and associated cultural resources, and managed through legal or other effective means.
Categories of primary designated functions	
Production	Forest area designated primarily for production of wood, fibre, bio-energy and/or non-wood forest products.
Protection of soil and water	Forest area designated primarily for protection of soil and water.
Conservation of biodiversity	Forest area designated primarily for conservation of biological diversity. Includes but is not limited to areas designated for biodiversity conservation within the protected areas.
Social services	Forest area designated primarily for social services.
Multiple use	Forest area designated primarily for more than one purpose and where none of these alone is considered as the predominant designated function.
Other	Forest areas designated primarily for a function other than production, protection, conservation, social services or multiple use.
No / unknown	No or unknown designation.
Special designation and management categories	
Area of permanent forest estate (PFE)	Forest area that is designated to be retained as forest and may not be converted to other land use.
Forest area within protected areas	Forest area within formally established protected areas independently of the purpose for which the protected areas were established.
Forest area under sustainable forest management	To be defined and documented by the country.
Forest area with management plan	Forest area that has a long-term (ten years or more) documented management plan, aiming at defined management goals, which is periodically revised.

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 and Prefectural Governments "National Forest Inventory (NFI)"	H	Forest for water and soil conservation, Forest for symbiosis with people, Forest for cyclic use of resources, Area of permanent forest estate, Forest area within protected areas, Forest area within management plan	2002 2007	

3.2.2 Classification and definitions

National class	Definition
Forest	Same as in section 1.4 under T1.
Forest for water and soil conservation	Forest managed primarily for water resource/soil conservation and/or prevention of natural disasters.
Forest for symbiosis with people	Forest managed primarily for preservation of natural resources and living environment, public health, and/or culture.
Forest for cyclic use of resources	Forest managed primarily for production of wood.

3.2.3 Original data

Categories	Area (1000 hectares)			
	1990	2000	2002	2007
Forest area (from T1)	24,950	24,876	24,868	24,979
Forest for water and soil conservation	n.a.	n.a.	16,291	17,506
Forest for symbiosis with people	n.a.	n.a.	3,239	3,207
Forest for cyclic use of resources	n.a.	n.a.	5,337	4,267

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

Categories	Area (1000 hectares)			
	1990	2000	2002	2007
Area of permanent forest estate (PFE)	n.a.	n.a.	10,484	13,149
Forest area within protected areas	n.a.	n.a.	10,484	13,149
Forest area under sustain-able forest management	n.a.	n.a.	n.a	n.a
Forest area with management plan	24,950	24,876	24,868	24,979

3.3 Analysis and processing of national data

3.3.1 Calibration

Not necessary.

3.3.2 Estimation and forecasting

(1) All forests in Japan are managed under the Forest Planning System. The Basic Plan for Forest and Forestry was established in 2001 pursuant to the Forest and Forestry Basic Act of 2001, which was revised from the Forestry Basic Act (Act No. 161, 1964). While all forests are expected to perform a certain degree of multiple functions, under the Basic Plan forests are classified into three categories (i.e., “forest for water and soil conservation”, “forest for symbiosis with people”, and “forest for cyclic use of resources”). This is to clarify which function to be focused and to describe appropriate forest management and conservation for each category. Because this forest classification was introduced in 2001, no data is available before then.

(2) Estimation for figures for 2010 was done with the same method used for the estimation of forest area of 2010 in T1 as described in the section 1.3.2(3).

3.3.3 Reclassification into FRA 2010 categories

Table 3a

FRA 2005 Categories	National Reporting Classes
Production	Forest for cyclic use of resources
Protection of soil and water	Forest for water and soil conservation
Social services	Forest for symbiosis with people

Table 3b

a) Area of permanent forest estate (PFE): Forest area under felling and land-use conversion restrictions by law was counted.

b) Forest area within protected areas: Forest area under felling and land-use conversion restrictions by law was counted.

c) Forest area under sustainable forest management: The definition of SFM has not been established for national statistics in Japan. As mentioned above, all forests in Japan are managed under the Forest Planning System (e.g., Basic Plan for Forest and Forestry, Nation-wide Forest Plan, Regional Forest Plan for private forests/national forests, Municipal Forest Management Plan and Forest Management Plan). However, there are some forests, especially in the case of planted forests, where forestry practices such as thinning are not appropriately implemented, and it is difficult to estimate the area. Therefore, the forest area under sustainable forest management has not been accurately estimated.

d) Forest area with management plan: Total forest area managed under the Forest Planning System was counted.

3.4 Data for Table T3

Table 3a – Primary designated function

FRA 2010 Categories	Forest area (1000 hectares)			
	1990	2000	2005	2010
Production	n.a.	n.a.	4 695	4 267
Protection of soil and water	n.a.	n.a.	17 020	17 506
Conservation of biodiversity	n.a.	n.a.	0	0
Social services	n.a.	n.a.	3 220	3 207
Multiple use	n.a.	n.a.	0	0
Other (please specify in comments below the table)	n.a.	n.a.	0	0
No / unknown	n.a.	n.a.	0	0
TOTAL	**24 950**	**24 876**	**24 935**	**24 979**

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

Table 3b – Special designation and management categories

FRA 2010 Categories	Forest area (1000 hectares)			
	1990	2000	2005	2010
Area of permanent forest estate	n.a.	n.a.	12 083	13 149
Forest area within protected areas	n.a.	n.a.	12 083	13 149
Forest area under sustainable forest management	n.a.	n.a.	n.a.	n.a.
Forest area with management plan	24 950	24 876	24 935	24 979

3.5 Comments to Table T3

Variable / category	Comments related to data, definitions, etc.	Comments on the reported trend
Production		
Protection of soil and water		
Conservation of biodiversity	The classification in Japan is used to systematically and effectively practice forest management and conservation by describing the desirable conditions of forest corresponding to the functions to be focused, as each forests are expected to perform multiple functions. Based on the fact that all the forests contribute to providing habitats to diverse species, execution of forest management practice is provided to pay due consideration to biodiversity conservation regardless of the classification.	
Social services		
Multiple use		
Other		
No / unknown designation		
Area of permanent forest estate		
Forest area within protected areas		
Forest area under sustainable forest management		
Forest area with management plan		

Other general comments to the table

4 Table T4 – Forest characteristics

4.1 FRA 2010 Categories and definitions

Term / category	Definition
Naturally regenerated forest	Forest predominantly composed of trees established through natural regeneration.
Introduced species	A species, subspecies or lower taxon, occurring outside its natural range (past or present) and dispersal potential (i.e. outside the range it occupies naturally or could occupy without direct or indirect introduction or care by humans).
Characteristics categories	
Primary forest	Naturally regenerated forest of native species, where there are no clearly visible indications of human activities and the ecological processes are not significantly disturbed.
Other naturally regenerated forest	Naturally regenerated forest where there are clearly visible indications of human activities.
Other naturally regenerated forest of introduced species *(sub-category)*	Other naturally regenerated forest where the trees are predominantly of introduced species.
Planted forest	Forest predominantly composed of trees established through planting and/or deliberate seeding.
Planted forest of introduced species *(sub-category)*	Planted forest, where the planted/seeded trees are predominantly of introduced species.
Special categories	
Rubber plantations	Forest area with rubber tree plantations.
Mangroves	Area of forest and other wooded land with mangrove vegetation.
Bamboo	Area of forest and other wooded land with predominant bamboo vegetation.

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 and Prefectural Governments "National Forest Inventory (NFI)"	H	Planted forest, Natural forest, Bamboo forest, Forest without standing tress	1990 1995 2002 2007	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**	**2007**
Planted forest	10,287	10,356	10,321	10,326
Natural forest of 81 years or older	3,764	3,517	4,269	4,568
Natural forest of 80 years or younger	9,591	9,704	8,916	8,744
Bamboo forest	149	150	154	156
Forest without standing trees	1,159	1,171	1,208	1,185
Total	**24,950**	**24,898**	**24,868**	**24,979**

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 and 2005 was done with the same method used for the T1 as described in section 1.3.2 (1) and (2).

(2) Forecasting for 2010 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 2010 was forecasted by a simple proportional extrapolation of data for 2005 and 2007, i.e.,

$E_{2010} = D_{2007} \times 8 / 5 - D_{2002} \times 3 / 5$

where

E_{2010} = Forecast for year 2010

D_{2002}, D_{2007} = Data for years 2002 and 2007

(ii) The areas of "Planted forest", "Bamboo forest" and "Forest without standing trees" in 2010 were forecasted to be the same as the figures of year 2007 because of the same reason as stated in Section 1.3.2 (3).

(iii) The area of "Natural forest of 80 years or younger" was forecasted by subtracting the areas of other classes forecasted in (i) and (ii) above from the total forest area forecasted for 2010 as provided in T1.

4.3.3 Reclassification into FRA 2010 categories

Table 4a

FRA 2005 Categories	National Reporting Classes
Primary forest	Natural forest of 81 years or older
Other naturally regenerated forest	Natural forest of 80years or younger Bamboo forest Forest without standing trees
... of which of introduced species	No data available
Planted forest	Planted forest
... of which of introduced species	No data available

Table 4b

FRA 2005 Categories	National Reporting Classes
Mangroves	No data available
Bamboo	Bamboo

4.4 Data for Table T4

Table 4a

FRA 2010 Categories	Forest area (1000 hectares)			
	1990	2000	2005	2010
Primary forest	3 764	4 054	4 449	4 747
Other naturally regenerated forest	10 899	10 492	10,162	9 906
...of which of introduced species	n.a.	n.a.	n.a.	n.a.
Planted forest	10 287	10 331	10 324	10 326
...of which of introduced species	n.a.	n.a.	n.a.	n.a.
TOTAL	**24 950**	**24 876**	**24 935**	**24 979**

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

Table 4b

FRA 2010 Categories	Area (1000 hectares)			
	1990	2000	2005	2010
Rubber plantations (Forest)	0	0	0	0
Mangroves (Forest and OWL)	n.a.	n.a.	n.a.	n.a.
Bamboo (Forest and OWL)	149	153	155	156

4.5 Comments to Table T4

Variable / category	Comments related to data, definitions, etc.	Comments on the reported trend
Primary forest		Natural forest over 81 years old is used for this category, and the natural forests have been increasing in Japan.
Other naturally regenerating forest		
Planted forest	Japan's planted forests consist mostly of native species. Although there are some forests with introduced species, no data are available.	
Rubber plantations		
Mangroves	A small area of mangroves exist in Okinawa region, however, there is no accurate information on the area.	
Bamboo		

Other general comments to the table

5 Table T5 – Forest establishment and reforestation

5.1 FRA 2010 Categories and definitions

Term	Definition
Afforestation	Establishment of forest through planting and/or deliberate seeding on land that, until then, was not classified as forest.
Reforestation	Re-establishment of forest through planting and/or deliberate seeding on land classified as forest.
Natural expansion of forest	Expansion of forests through natural succession on land that, until then, was under another land use (e.g. forest succession on land previously used for agriculture).

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 "Handbook of Forestry Statistics"	H	Area of reforestation (of which on previously planted forest, of which on previously natural forest)	1988 -1992, 1998 -2006	

5.2.2 Classification and definitions

National class	Definition
Reforestation	Same as Reforestation as per FAO's definition.
... of which on previously planted forest	Establishment of planted forest after harvesting planted forest, including planting after thinning.
... of which on previously natural forest etc	Replacement of broadleaved forests, natural forests and wilderness, which were sources for firewood and charcoal, with planted forests of conifer trees that grow faster and provide highly useful wood.

5.2.3 Original data

(Unit: ha)

	88	89	90	91	92	98	99	00	01	02
Reforestation Total	**78,839**	**72,009**	**67,139**	**58,256**	**54,006**	**44,818**	**38,482**	**35,908**	**32,457**	**30,089**
... of which on previously planted forest	24,630	24,053	24,196	22,150	22,235	22,832	20,057	19,384	18,036	16,218
... of which on previously natural forest etc	54,209	47,956	42,943	36,106	31,771	21,986	18,425	16,524	14,421	13,871

	03	04	05	06	07
Reforestation Total	**28,898**	**28,466**	**28,576**	**28,515**	**33,784**
... of which on previously planted forest	16,570	16,984	18,701	19,993	25,093
... of which on previously natural forest etc	12,328	11,482	9,875	8,522	8,691

5.3 Analysis and processing of national data

5.3.1 Calibration

Not necessary.

5.3.2 Estimation and forecasting

For figures for 1990 , 2000 and 2005, five-year average of data for 1988 to 1992 , 1998 to 2002 and 2003 to 2007, respectively, were calculated.

Japan's planted forests consist mostly of native species. Although there are some planted forests with introduced species, no data are available on planted forests with introduced species.

5.3.3 Reclassification into FRA 2010 categories

FRA 2005 Categories	National Reporting Classes
Afforestation	No data available
Reforestation	Reforestation
...of which on areas previously planted	...of which on previously planted forest
Natural expansion of forest	No data available

5.4 Data for Table T5

FRA 2010 Categories	Annual forest establishment [1] (hectares/year)			...of which of introduced species [1] (hectares/year)		
	1990	2000	2005	1990	2000	2005
Afforestation	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Reforestation	66,050	36,351	29,648	n.a.	n.a.	n.a.
...of which on areas previously planted	23,453	19,305	19,468	n.a.	n.a.	n.a.
Natural expansion of forest	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.

Note: The figures for the reporting years refer to the averages for the 5-year periods 1988-1992, 1998-2002 and 2003-2007 respectively.

5.5 Comments to Table T5

Variable / category	Comments related to data, definitions, etc.	Comments on the reported trend
Afforestation		
Reforestation		
Natural expansion of forest		

Other general comments to the table

6 Table T6 – Growing stock

6.1 FRA 2010 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.
Growing stock of commercial species	Growing stock (see def. above) of commercial species.

6.2 National data

6.2.1 Data sources

References to sources of information	Quality (H/M/L)	Variable(s)	Year(s)	Additional comments
Forestry Agency and Prefectural Governments "National Forest Inventory (NFI)"	H	Growing stock	1990 1995 2002 2007	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)

6.2.2 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.

6.2.3 Original data

	Volume (million cubic meters over bark)			
	1990	1995	2002	2007
Growing stock	3,113	3,458	4,013	4,419
Of which under-stocked land	2) 2	1	1	1

1) Total may not coincide with the aggregate of individual figures because of the rounding.
2) For 1990, data cannot 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".

Growing stock of the 10 most common species

Name of Tree Species			Growing Stock in Forests (million cubic meters)			
Japanese common name	Scientific name	English common name	1990	1995	2002	2007
Sugi	*Cryptomeria japonica*	Japanese Red Cedar	n.a	n.a	1 343	1 518
Hinoki	*Chamaecyparis obtusa*	Hinoki Cypress	n.a	n.a	500	579
Matsu group	*Pinus spp.*	Pine (Japanese Red Pine, Japanese Black Pine, etc)	n.a	n.a	367	400

Karamatsu	*Larix kaempferi*	Japanese Larch	n.a	n.a	201	213
Todomatsu	*Abies sachalinensis*	Sakhalin Fir	n.a	n.a	161	180
Nara group (excluding Kunugi)	*Quercus dentata, Q.mongolica, Q. serrata, etc.*	Konara Oak, Mongolian Oak, Daimyo Oak, etc	n.a	n.a	89	74
Yezomatsu and Tohi	*Picea jezoensis*	Hondo Spruce, Yezo Spruce	n.a	n.a	56	43
Kunugi	*Quercus acutissima*	Japanese Chestnut Oak	n.a	n.a	16	17
Other broadleaves		Other broadleaves	1 097	1 159	1 165	1 255
Other conifers		Other conifers	2 010	2 298	113	135
		TOTAL	**3 111**	**3 457**	**4 012**	**4 415**

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

6.3 Analysis and processing of national data

6.3.1 Calibration

Not necessary.

6.3.2 Estimation and forecasting

Estimation for 2000 and 2005 was done with the same method used for the T1 as described in section 1.3.2 (1) and (2).

6.3.3 Reclassification into FRA 2010 categories

"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 FRA2010 classes. No data exist on commercial growing stock since Japan does not employ such classification.

6.4 Data for Table T6

Table 6a – Growing stock

FRA 2010 category	Volume (million cubic meters over bark)							
	Forest				Other wooded land			
	1990	2000	2005	2010	1990	2000	2005	2010
Total growing stock	3,111	3,853	4,255	n.a	n.a.	n.a.	n.a.	n.a.
... of which coniferous	2,010	2,615	2,938	n.a	n.a.	n.a.	n.a.	n.a.
... of which broadleaved	1,097	1,238	1,316	n.a	n.a.	n.a.	n.a.	n.a.
Growing stock of commercial species	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.

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

Table 6b – Growing stock of the 10 most common species

FRA 2010 category / Species name			Growing stock in forest (million cubic meters)		
Rank	Scientific name	Common name	1990	2000	2005
1st	*Cryptomeria japonica*	Sugi	n.a	n.a	1,448
2nd	*Chamaecyparis obtusa*	Hinoki	n.a	n.a	547
3rd	*Pinus spp.*	Matsu group	n.a	n.a	387
4th	*Larix kaempferi*	Karamatsu	n.a	n.a	208
5th	*Abies sachalinensis*	Todomatsu	n.a	n.a	173
6th	*Quercus spp.* (excluding *Quercus acutissima* and ever-	Nara group (excluding Kunugi)	n.a	n.a	80

	green species)				
7th	*Picea jezoensis*	Yezomatsu and Tohi	n.a	n.a	48
8th	*Quercus acutissima*	Kunugi	n.a	n.a	17
9th			n.a	n.a	n.a
10th			n.a	n.a	n.a
Remaining					**1347**
Total			**3 111**	**3 853**	**4 255**

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

Note: Rank refers to the order of importance in terms of growing stock, i.e. 1st is the species with the highest growing stock. Year 2000 is the reference year for defining the species list and the order of the species.

Table 6c – Specification of threshold values

Specification of country threshold values	Value	Complementary information
1. Minimum diameter at breast height of trees included in Growing stock (X)	3cm	
2. Minimum diameter at the top end of stem (Y) for calculation of Growing stock	0cm	
3. Minimum diameter of branches included in Growing stock (W)	n.a.	Branches are not included
4. Volume refers to "Above ground" (AG) or "Above stump" (AS)	AG	

6.5 Comments to Table T6

Variable / category	Comments related to data, definitions, etc.	Comments on the reported trend
Total growing stock		
Growing stock of broadleaved / coniferous		
Growing stock of commercial species	Commercial species and non-commercial species are not distinguished in Japan. Though some degree of restriction is imposed in some areas based on a certain law, almost all species are basically commercially usable.	

Other general comments to the table

7 Table T7 – Biomass stock

7.1 FRA 2010 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 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	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.

7.2 National data

7.2.1 Data sources

References to sources of information	Quality (H/M/L)	Variable(s)	Year(s)	Additional comments
Forestry Agency and Prefectural Governments "National Forest Inventory (NFI)"	H	Growing stock	1990 2000 2005	

(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 by biomass expansion factor by a ratio of below-ground parts against above-ground parts by wood density. Biomass stock in undergrowth, dead wood, litter, and soil is not estimated.
(2) Biomass expansion factor and wood density used for estimating biomass stock are based on "National Greenhouse Gas Inventory Report of Japan (April, 2009)" 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
Biomass stock of forest	Biomass stock of trunk, branches and roots of standing trees in the forest (in metric ton), which can be estimated as: Growing stock of forest (planted and natural) (m^3) x Biomass expansion factor x (1 + ratio of below-ground parts against above-ground parts) x Wood density (t / m^3 dry matter) Biomass expansion factor is a ratio of the total volume of trunk, branches and leaves against trunk volume. Wood density is the weight of biomass in 1 cubic meter of wood in dry material.

7.2.3 Original data

	Biomass (million metric tonnes oven-dry weight)		
	Forest		
	1990	**2000**	**2005**
Above-ground biomass	1,848	2,202	2,433
Below-ground biomass	470	560	618
TOTAL	**2,317**	**2,762**	**3,051**

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	Ratio of below-ground parts against above-ground parts	Wood density
Intensively Managed Forests	Conifer	<=20	Sugi cedar	1.57	0.25	0.31 4
			Hinoki cypress	1.55	0.26	0.407
			Pine	1.56	0.27	0.453
			Larch	1.50	0.29	0.404
			Todo fir	1.88	0.21	0.318
			Yezo spruce	2.17	0.21	0.362
			Other N	2.36	0.26	0.358
		>20	Sugi cedar	1.23	0.25	0.314
			Hinoki cypress	1.24	0.26	0.407
			Pine	1.25	0.27	0.453
			Larch	1.15	0.29	0.404
			Todo fir	1.38	0.21	0.318
			Yezo spruce	1.65	0.21	0.362
			Other N	1.38	0.26	0.358
	Broad leaf	<=20	Sawtooth oak	1.36	0.26	0.668
			Oak	1.40	0.26	0.624
			Other L	1.40	0.26	0.529
		>20	Sawtooth oak	1.32	0.26	0.668
			Oak	1.26	0.26	0.624
			Other L	1.30	0.26	0.529
Semi-Natural Forests	Conifer	<=20		1.84	0.26	0.396
		>20		1.33	0.26	0.396
	Broad leaf	<=20		1.40	0.26	0.596
		>20		1.27	0.26	0.596

7.3 Analysis and processing of national data

7.3.1 Calibration

7.3.2 Estimation and forecasting

7.3.3 Reclassification into FRA 2010 categories

7.4 Data for Table T7

FRA 2010 category	Biomass (million metric tonnes oven-dry weight)							
	Forest				Other wooded land			
	1990	2000	2005	2010	1990	2000	2005	2010
Above-ground biomass	1,848	2,202	2,433	n.a.	n.a.	n.a.	n.a.	n.a.
Below-ground biomass	470	560	618	n.a.	n.a.	n.a.	n.a.	n.a.
Dead wood	n.a.	n.a.	n.a	n.a.	n.a.	n.a.	n.a.	n.a.
TOTAL	**2,317**	**2,762**	**3,051**	n.a.	n.a.	n.a.	n.a.	n.a.

7.5 Comments to Table T7

Variable / category	Comments related to data, definitions, etc.	Comments on the reported trend
Above-ground biomass		
Below-ground biomass		
Dead wood		

Other general comments to the table

8 Table T8 – Carbon stock

8.1 FRA 2010 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 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	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 the minimum diameter for dead wood (e.g. 10 cm), lying dead in various states of decomposition above the mineral or organic soil.
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.

8.2 National data

8.2.1 Data sources

(1) Carbon stock of above- and below-ground can be estimated by multiplying the biomass stock estimated in T7 by the carbon content of dry matter. In addition, in Japan, Greenhouse Gas emissions and removals of dead wood, litter and soil in forest sector are averaged by using Calculation model CENTURY-jfos. Therefore, Carbon stock of each year cannot be calculated.

(2) Carbon content of dry matter used for estimating carbon stock is based on ” National Greenhouse Gas Inventory Report of Japan (April, 2009)” which was compiled by National Institute for Environmental Studies Greenhouse Gas Inventory Office (GIO) under the supervision of Ministry of the Environment.

8.2.2 Classification and definitions

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

8.2.3 Original data

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

8.3 Analysis and processing of national data

Estimated from biomass stock estimated in T7 for 1990, 2000 and 2005.

8.4 Data for Table T8

FRA 2010 Category	Carbon (Million metric tonnes)							
	Forest				Other wooded land			
	1990	2000	2005	2010	1990	2000	2005	2010
Carbon in above-ground biomass	924	1,101	1,217	n.a.	n.a.	n.a.	n.a.	n.a.
Carbon in below-ground biomass	235	280	309	n.a.	n.a.	n.a.	n.a.	n.a.
Sub-total: Living biomass	**1,159**	**1,381**	**1,526**	n.a.	n.a.	n.a.	n.a.	n.a.
Carbon in dead wood	n.a.	n.a.	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.	n.a.	n.a.
Sub-total: Dead wood and litter	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Soil carbon	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
TOTAL	**1,159**	**1,381**	**1,526**	n.a.	n.a.	n.a.	n.a.	n.a.

Soil depth (cm) used for soil carbon estimates	n.a.

8.5 Comments to Table T8

Variable / category	Comments related to data, definitions, etc.	Comments on the reported trend
Carbon in above-ground biomass		
Carbon in below-ground biomass		
Carbon in dead wood		
Carbon in litter		
Soil carbon		

Other general comments to the table

9 Table T9 – Forest fires

9.1 FRA 2010 Categories and definitions

Category	Definition
Number of fires	Average number of vegetation fires per year in the country.
Area affected by fire	Average area affected by vegetation fires per year in the country.
Vegetation fire *(supplementary term)*	Any vegetation fire regardless of ignition source, damage or benefit.
Wildfire	Any unplanned and/or uncontrolled vegetation fire.
Planned fire	A vegetation fire regardless of ignition source that burns according to management objectives and requires limited or no suppression action.

9.2 National data

9.2.1 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	1988 - 1992, 1998 - 2007	

9.2.2 Classification and definitions

National class	Definition
Damage caused by forest fire	Number of and area lost by forest fires.

9.2.3 Original data

(Area: 1,000 ha)

Categories	88	89	90	91	92	98	99	00	01	02
Area of forest fires	3.2	2.1	1.3	2.7	2.3	0.8	1.0	1.5	1.8	2.6
Number of forest fires	3,589	2,894	2,858	2,535	2,262	1,913	2,661	2,805	3,007	3,343

Categories	03	04	05	06	07
Area of forest fires	0.7	1.6	1.1	0.8	0.7
Number of forest fires	1,810	2,592	2,215	1,576	2,156

9.3 Analysis and processing of national data

9.3.1 Calibration

Not necessary

9.3.2 Estimation and forecasting

For figures for 1990, 2000 and 2005, five-year average of data for 1988 to 1992, 1998 to 2002, and 2003 to 2007 respectively, were calculated.

9.3.3 Reclassification into FRA 2010 categories

"Damage caused by forest fire" as per Japan's definition was counted as "total land area affected by fire...of which on forest".

9.4 Data for Table T9

Table 9a

FRA 2010 category	Annual average for 5-year period					
	1990		2000		2005	
	1000 hectares	number of fires	1000 hectares	number of fires	1000 hectares	number of fires
Total land area affected by fire	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
... of which on forest	2.3	2,828	1.5	2,746	1.0	2,070
... of which on other wooded land	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
... of which on other land	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.

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

Table 9b

FRA 2010 category	Proportion of forest area affected by fire (%)		
	1990	2000	2005
Wildfire	100	100	100
Planned fire	0	0	0

Note: The figures for the reporting years refer to the averages of annually affected areas for the 5-year periods 1988-1992, 1998-2002 and 2003-2007 respectively

Total area affected by fire is the main estimate that should be supported by national data whenever possible. The further breakdown of the area into forest, other wooded land and other land can be rough expert estimate if no data are available.

9.5 Comments to Table T9

Variable / category	Comments related to data, definitions, etc.	Comments on the reported trend
Area affected by fire		
Number of fires		
Wildfire / planned fire		

Other general comments to the table

10 Table T10 – Other disturbances affecting forest health and vitality

10.1 FRA 2010 Categories and definitions

Term	Definition
Disturbance	Damage caused by any factor (biotic or abiotic) that adversely affects the vigour and productivity of the forest and which is not a direct result of human activities.
Invasive species	Species that are non-native to a particular ecosystem and whose introduction and spread cause, or are likely to cause, socio-cultural, economic or environmental harm or harm to human health.
Category	**Definition**
Disturbance by insects	Disturbance caused by insect pests.
Disturbance by diseases	Disturbance caused by diseases attributable to pathogens, such as bacteria, fungi, phytoplasma or virus.
Disturbance by other biotic agents	Disturbance caused by biotic agents other than insects or diseases, such as wildlife browsing, grazing, physical damage by animals, etc.
Disturbance caused by abiotic factors	Disturbances caused by abiotic factors, such as air pollution, snow, storm, drought, etc.

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 "Handbook of Forestry Statistics"	H	Damage caused by designated forest diseases and insects, mammals, and extreme weather events	1988 - 1992, 1998 - 2007	
Forestry Agency "National Forest Management Statistics"	H	Damage caused by extreme weather events (national forest)	1988 - 1992, 1998 - 2007	
Ministry of the Environment "Basic Plan for conservation and restoration of natural environment in Ogasawara Islands"	H	Canopy-occupation area of Javanese bishopwood	2007	

10.2.2 Classification and definitions

National class	Definition
Damage caused by designated biological causes	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 pine nematode, data are

	provided in the volume of standing trees damaged. a. Pine nematode (*Bursaphelenchus xylophilus*) carried by the pine sawyer beetle (*Monochamus alternatus*) b. Wood-boring beetle such as ambrosia beetle c. Pine moth (*Dendrolimus spectabilis*) d. Pine needle gall midge (*Thecodiplosis japonensis*) e. Cryptomeria needle gall midge (*Contarinia inouye*) f. Gypsy moth (*Lymantria dispar praetelea*) g. Cryptomeria spider mite (Acarina sp.) *h.* Chestnut gall wasp (*Dryocosmus kuriphilus*) i. Field mice j. Shoot blight of larch (*Botryosphaeria laricina*) k. Oak platypodid beetle (*Platypus quercivorus*)
Damage caused by mammals	Area of forest damaged by Japanese Macaque (*Maccaca fuscata*), field mice, field hare, Japanese serow (*Capricornis crispus*), Sika deer (*Cervus nippon*), Wild boar (*Sus scrofa*), and wild bears (*Selenarctos thibetanus* and *Ursus arctos*). Note that field mice are included also in the designated biological causes listed above.
Damage caused by extreme weather events	Area of forest damaged by extreme weather events such as wind, water, snow, drought, frost and saline wind.
Canopy-occupation area of Javanese bishopwood	Area of canopy occupied by Javanese bishopwood.

10.2.3 Original data

Forestry Agency
"Damage caused by designated forest diseases and insects, mammals, and extreme weather events"

(Unit: 1000 m^3 for Pine nematode, 1000 hectares for others)

Categories	88	89	90	91	92	98	99	00	01	02
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 beetle	-	-	-	-	-	-	-	-	-	-
(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	-	-	-	-	-	-	-	-	-	-
(11) Oak platypodid beetle						0.3	0.4	0.4	0.4	1.0
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

(7) Wild bears	0.2	0.2	0.2	0.2	0.2	0.4	0.5	0.6	0.5	0.3
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

Categories	**03**	**04**	**05**	**06**	**07**
Damage caused by designated biological causes					
(1) Pine nematode	797	733	689	644	619
(2) Wood-boring beetle	-	-	-	-	-
(3) Pine moth	0.0	0.1	0.0	0.0	0.5
(4) Pine needle gall midge	-	-	-	-	-
(5) Cryptomeria needle gall midge	-	0.0	-	-	-
(6) Gypsy moth	0.6	-	-	0.0	-
(7) Cryptomeria spider mite	0.0	0.0	-	-	-
(8) Chestnut gall wasp	-	-	-	-	-
(9) Field mice	0.2	0.8	0.3	0.2	0.3
(10) Shoot blight of larch	-	-	-	-	-
(11) Oak platypodid beetle	1.0	1.2	1.9	0.8	1.2
Damage caused by mammals					
(1) Japanese Macaque	0.1	0.1	0.0	0.1	0.1
(2) Field mice	(Already presented above)				
(3) Field hare	0.4	0.4	0.3	0.3	0.2
(4) Japanese serow	1.1	1.0	0.8	0.8	0.6
(5) Sika deer	4.5	3.9	3.5	3.0	3.5
(6) Wild boar	0.5	0.7	0.4	0.3	0.2
(7) Wild bears	0.5	0.7	0.4	0.5	1.1
Damage caused by extreme weather events					
(1) Wind and water	0.9	59.9	1.3	15.4	3.0
(2) Snow	2.1	2.4	1.0	2.6	2.4
(3) Drought	0.2	0.1	0.7	0.1	0.8
(4) Frost	0.1	0.3	0.0	0.0	0.2
(5) Saline wind	0.0	0.1	0.0	0.0	0.0

Ministry of the Environment
"Canopy-occupation area of Javanese bishopwood in Ogasawara Islands"

	2003
Mother Island (ha)	296.5
Father Island (ha)	50.9
Total (ha)	**347.4**

10.3 Analysis and processing of national data

10.3.1 Calibration

Not necessary

10.3.2 Estimation and forecasting

For figures for 1990 , 2000 and 2005, five-year average of data for 1988 to 1992 , 1998 to 2002 and 2003 to 2007, respectively, were calculated.

10.3.3 Reclassification into FRA 2010 categories

FRA 2005 Categories	National Reporting Classes
Disturbance by insects	Damage caused by: wood-boring beetle, pine moth, pine needle gall midge, cryptomeria needle gall midge, gypsy moth and chestnut gall wasp
Disturbance by diseases	Damage caused by: pine nematode, cryptomeria spider mite, shoot blight of larch and oak platypodid beetle
Disturbance by other biotic agents	Damage caused by mammals
Disturbance by abiotic agents	Damage caused by extreme weather events

10.4 Data for Table T10

Table 10a – Disturbances

FRA 2010 category	Affected forest area (1000 hectares)		
	1990	2000	2005
Disturbance by insects	2.4	0.0	0.2
Disturbance by diseases	1.4	0.5	1.2
Disturbance by other biotic agents	8.2	8.1	6.3
Disturbance caused by abiotic factors	27.4	18.5	18.7
Total area affected by disturbances	**39.4**	**27.1**	**26.4**

Notes: The figures for the reporting years refer to the averages of annually affected areas for the 5-year periods 1988-1992, 1998-2002 and 2003-2007 respectively.

The total area affected by disturbances is not necessarily the sum of the individual disturbances as these may be overlapping.

Table 10b – Major outbreaks of insects and diseases affecting forest health and vitality

Description / name	Tree species or genera affected (scientific name)	Year(s) of latest outbreak	Area affected (1000 hectares)	If cyclic, approx. cycle (years)
Pine nematode	*Pine trees*			
Oak platypodid beetle	*Deciduous oaks*			

Note: Area affected refers to the total area affected during the outbreak.

Table 10c – Area of forest affected by woody invasive species

Scientific name of woody invasive species	Forest area affected 2005 (1000 hectares)
Javanese bishopwood *(Bischofia javanica)*	0.3
Total forest area affected by woody invasive species	0.3

Note: The total forest area affected by woody invasive species is not necessary the sum of the values above, as these may be overlapping.

10.5 Comments to Table T10

Variable / category	Comments related to data, definitions, etc.	Comments on the reported trend
Disturbance by insects		
Disturbance by diseases	Data on the area damaged by pine nematode is not available. Only data on the volume of standing trees is available. They are 1,041, 828 and 697 (in 1000 m3) for the year 1990, 2000 and 2005 respectively.	
Disturbance by other biotic agents		
Disturbance caused by abiotic factors		
Major outbreaks		
Invasive species		

Other general comments to the table

11 Table T11 – Wood removals and value of removals

11.1 FRA 2010 Categories and definitions

Category	Definition
Industrial roundwood removals	The wood removed (volume of roundwood over bark) for production of goods and services other than energy production (woodfuel).
Woodfuel removals	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 - 2007	
Ministry of Agriculture, Forestry and Fisheries Statistics Department "Production Forestry Income Statistics Report"	H	Value of wood production (conifers, broadleaves)	1988 - 1992, 1998 - 2007	

11.2.2 Classification and definitions

National class	Definition
Industrial wood	Same as "Industrial wood" as per FAO's definition, not including 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.
Value of wood production (conifers and broadleaves)	Calculated by multiplying the amount of wood produced by their prices (i.e., log price at the log yard closest to the forest), all of which are drawn mainly from other existing statistics on forest products.

11.2.3 Original data

Forestry Agency, "Wood Demand and Supply Table" (Unit: Volume of roundwood over bark, 1000 m^3)

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

Category	03	04	05	06	07
Industrial wood	16,148	16,555	17,176	17,617	18,626
Wood for Shiitake mushroom cultivation	634	610	565	535	542
Wood for woodfuel	181	169	159	148	145

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 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 (broad-leaves)	16,345	16,566	16,870	17,281	15,232	6,521	6,243	5,472	4,501	3,859
Value of woodfuel production	686	776	826	878	934	669	733	616	546	756

Category	03	04	05	06	07
Value of wood production (conifers)	19,677	18,776	17,741	18,389	19,520
Value of wood production (broad-leaves)	3,501	3,158	3,171	3,219	2,938
Value of woodfuel production	755	649	609	560	548

11.3 Analysis and processing of national data

11.3.1 Calibration

Not necessary.

11.3.2 Estimation and forecasting

(1) For figures for 1990 , 2000 and 2005, five-year average of data for 1988 to 1992 , 1998 to 2002 and 2003 to 2007, respectively, were calculated.

11.3.3 Reclassification into FRA 2010 categories

(1) Industrial roundwood removals: Total volume of "industrial wood" and "wood for Shiitake mushroom cultivation" as per Japan's definitions was counted. "Value of wood production (conifers, broadleaves)" was counted as "total value of industrial roundwood removals".
(2) Woodfuel removals: Volume and value of "wood for woodfuel" as per Japan's definition were counted.

11.4 Data for Table T11

FRA 2010 Category	Industrial roundwood removals			Woodfuel removals		
	1990	2000	2005	1990	2000	2005
Total volume (1000 m^3 o.b.)	30,765	18,601	17,803	365	242	160
... of which from forest	30,765	18,601	17,803	365	242	160
Unit value (local currency / m^3 o.b.)	22,624	16,716	12,368	n.a.	n.a.	n.a.
Total value (1000 local currency)	696040000	310940000	220180000	n.a.	n.a.	n.a.

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

	1990	2000	2005
Name of local currency	Yen	Yen	Yen

11.5 Comments to Table T11

Variable / category	Comments related to data, definitions, etc.	Comments on the reported trend
Total volume of industrial roundwood removals		
Total volume of woodfuel removals		
Unit value		
Total value		

Other general comments to the table

12 Table T12 – Non-wood forest products removals and value of removals

12.1 FRA 2010 Categories and definitions

Term	Definition
Non-wood forest product (NWFP)	Goods derived from forests that are tangible and physical objects of biological origin other than wood.
Value of NWFP removals	For the purpose of this table, value is defined as the market value at the site of collection or forest border.

NWFP categories

Category
Plant products / raw material
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
Animal products / raw material
9. Living animals
10. Hides, skins and trophies
11. Wild honey and bee-wax
12. Wild meat
13. Raw material for medicine
14. Raw material for colorants
15. Other edible animal products
16. Other non-edible animal products

12.2 National data

12.2.1 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	Wild vegetables, bamboo shoots, Sakaki (Religious tree), chestnut, bamboo, medicinal herbs, Matsutake mushrooms, ginkgo nut, camellia oil, Wax	2005	

12.2.2 Classification and definitions

National class	Definition
Special forest products collected from wild, bamboo and bamboo shoots (listed above)	Special forest products (i.e., products derived from forests other than industrial wood and fuelwood) collected from wild, not including those produced on agricultural land and greenhouse cultivation.

12.2.3 Original data

Forestry Agency, "Basic Information on Special Forest Products"
(Unit: 1000 bundles for bamboo, 1000 branches for Sakaki, kiloliter for camellia oil, and tonnes for others)

Items	2005	
	Production	Value (1,000 yen)
Wild vegetables	7,631.0	7,250,943
Bamboo shoots	23,201.0	5,637,843
Sakaki (religious tree)	22,962.7	4,166,235
Chestnut	2,975.9	1,252,854
Bamboo	1,290.3	1,180,526
Medicinal herbs	221.5	1,091,056
Matsutake mushrooms	39.1	950,169
Ginkgo nut	199.5	359,898
Camellia oil	32.2	133,855
Wax	55.0	132,000

12.3 Analysis and processing of national data

12.3.1 Calibration

Not necessary.

12.3.2 Estimation and forecasting

Amount of bamboo and camellia oil were converted to metric tonnes by using the following conversion factors:

Product	Unit	
Bamboo	1,000 bundles	= 3,000 kilograms
Camellia oil	kiloliter	density = 0.91

12.3.3 Reclassification into FRA 2010 categories

FRA 2005 Categories	National Reporting Classes
Food	Wild vegetables, bamboo shoot, matsutake mushroom, chestnut, gingko nut and camellia oil
Raw material for medicine and aromatic products	Medicinal herbs
Raw material for utensils, handicrafts & construction	Wax and bamboo
Ornamental plants	Sakaki (religious tree)

12.4 Data for Table T12

Rank	Name of product	Key species	Unit	NWFP removals 2005		NWFP category
				Quantity	Value (1000 local currency)	
1st	Wild vegetables (Bracken and fiddlehead fern (pohole)	*Pteridium aquilinum var. Latiusculum, Osmunda japonica*	tonnes	7,631	7,250,943	1
2nd	Bamboo shoot		tonnes	23,201	5,637,843	1
3rd	Sakaki (religious tree)	*Cleyera japonica*	1,000 branches	22,963	4,166,235	6
4th	Chestnut		tonnes	2,976	1,252,854	1
5th	Bamboo (Japanese timber bamboo and Moso bamboo)	*Phyllostachys bambusoides, Phyllostachys pubescens*	tonnes	38,709	1,180,526	5
6th	Medicinal herbs (Amur cork tree and Gennnoshouko)	*Phellodendron amurense, Geranium thunbergii*	tonnes	222	1,091,056	3
7th	Matsutake mushroom	*Tricholoma matsutake* (S. Ito et Imai) Sing	tonnes	39	950,169	1
8th	Ginkgo nut		tonnes	200	359,898	1
9th	Camellia oil		tonnes	29	133,855	1
10th	Wax		tonnes	55	132,000	5
All other plant products					66,887	
All other animal products						
TOTAL					**22,222,266**	

	2005
Name of local currency	Yen

12.5 Comments to Table T12

Variable / category	Comments related to data, definitions, etc.
10 most important products	
Other plant products	
Other animal products	

Value by product	
Total value	

Other general comments to the table

13 Table T13 – Employment

13.1 FRA 2010 Categories and definitions

Category	Definition
Full-time equivalents (FTE)	A measurement equal to one person working full-time during a specified reference period.
Employment	Includes all persons in paid employment or self-employment.
Paid employment	Persons who during a specified reference period performed some work for wage or salary in cash or in kind.
Self-employment	Persons who during a specified reference period performed some work for profit or family gain in cash or in kind (e.g. employers, own-account workers, members of producers' cooperatives, contributing family workers).

13.2 National data

13.2.1 Data sources

References to sources of information	Quality (H/M/L)	Variable(s)	Year(s)	Additional comments
Ministry of Internal Affairs and Communications "Population Census"	H	Number of employed person ("employees", "self-employed workers", and "family workers") within the industry classification "forestry"	1990 2000 2005	The census covered all persons usually living in Japan, 15 years or older at the census date, i.e., 30 September of each year. Employed persons refer to those who did any work during the week before the census date for pay or profit. For further information, refer to: http://www.stat.go.jp/english/data/kokusei/index.htm

13.2.2 Classification and definitions

National class	Definition
"Forestry"	"Forestry" as defined in the Standard Industrial Classification for Japan.
"Employees"	Those employed by a person, a company, a corporation or a government office, etc. This includes executives and directors of a company or a corporation including managing directors.
"Self-employed workers"	Persons who run a business including those doing home handicraft work.
"Family workers"	Persons who work in a business operated by a member of the household in which they lived.

13.2.3 Original data

Ministry of Internal Affairs and Communications, "Population Census"

Categories	Unit: persons		
	1990	2000	2005
Employees	77,182	47,176	31,382
Self-employed workers	21,195	14,151	11,135

Family workers	9,109	5,815	4,094
Total [1)]	**107,500**	**67,153**	**46,618**

1) Total includes persons whose employment status is unknown.

13.3 Analysis and processing of national data

13.3.1 Calibration

Not necessary.

13.3.2 Estimation and forecasting

Not necessary.

13.3.3 Reclassification into FRA 2010 categories

FRA 2005 Categories	National Reporting Classes
Employment in primary production of goods	Employed persons working in "forestry"
paid employment	"Employees"
self-employment	"Self-employed workers" and "family workers"

13.4 Data for Table T13

FRA 2010 Category	Employment (1000 years FTE)		
	1990	2000	2005
Employment in primary production of goods	108	67	47
...of which paid employment	77	47	31
...of which self-employment	30	20	15
Employment in management of protected areas	n.a.	n.a.	n.a.

13.5 Comments to Table T13

Variable / category	Comments related to data, definitions, etc.	Comments on the reported trend
Employment in primary production of goods		
Paid employment / self-employment		
Employment in management of protected areas		

Other general comments to the table

14 Table T14 – Policy and legal framework

14.1 FRA 2010 Categories and definitions

Term	Definition
Forest policy	A set of orientations and principles of actions adopted by public authorities in harmony with national socio-economic and environmental policies in a given country to guide future decisions in relation to the management, use and conservation of forest and tree resources for the benefit of society.
Forest policy statement	A document that describes the objectives, priorities and means for implementation of the forest policy.
National forest programme (nfp)	A generic expression that refers to a wide range of approaches towards forest policy formulation, planning and implementation at national and sub-national levels. The national forest programme provides a framework and guidance for country-driven forest sector development with participation of all stakeholders and in consistence with policies of other sectors and international policies.
Law (Act or Code) on forest	A set of rules enacted by the legislative authority of a country regulating the access, management, conservation and use of forest resources.

14.2 Data for Table T14

Indicate the existence of the following (2008)			
Forest policy statement with national scope		X	Yes
			No
If Yes above, provide:	Year of endorsement	2001	
	Reference to document	Forest and Forestry Basic Act	
National forest programme (nfp)		X	Yes
			No
If Yes above, provide:	Name of nfp in country	The Basic Plan on Forest and Forestry	
	Starting year	2006	
	Current status		In formulation
		X	In implementation
			Under revision
			Process temporarily suspended
	Reference to document or web site	http://www.rinya.maff.go.jp/j/press/h18-9gatu/0908kihonkeikaku.html (Japanese only)	
Law (Act or Code) on forest with national scope		X	Yes, specific forest law exists
			Yes, but rules on forests are incorporated in other (broader) legislation
			No, forest issues are not regulated by national legislation
If Yes above, provide:	Year of enactment	1951	
	Year of latest amendment	2006	
	Reference to document	Forest Act	

In case the responsibility for forest policy- and/or forest law-making is decentralized, please indicate the existence of the following and explain in the comments below the table how the responsibility for forest policy- and law-making is organized in your country.		
Sub-national forest policy statements	X	Yes
		No
If Yes above, indicate the number of regions/states/provinces with forest policy statements	47 prefectures	
Sub-national Laws (Acts or Codes) on forest		Yes
	X	No
If Yes above, indicate the number of regions/states/provinces with Laws on forests		

14.3 Comments to Table T14

Variable / category	**Comments related to data, definitions, etc.**
Forest policy statement with national scope	
National forest programme (nfp)	
Law (Act or Code) on forest with national scope	
Sub-national forest policy statements	
Sub-national Laws (Acts or Codes) on forest	

Other general comments to the table

15 Table T15 – Institutional framework

15.1 FRA 2010 Categories and definitions

Term	Definition
Minister responsible for forest policy-making	Minister holding the main responsibility for forest issues and the formulation of the forest policy.
Head of Forestry	The Head of Forestry is the Government Officer responsible for implementing the mandate of the public administration related to forests.
Level of subordination	Number of administrative levels between the Head of Forestry and the Minister.
University degree	Qualification provided by University after a minimum of 3 years of post secondary education.

15.2 Data for Table T15

Table 15a – Institutions

FRA 2010 Category	2008	
Minister responsible for forest policy formulation : please provide full title	Minister of Agriculture, Forestry and Fisheries, Shigeru Ishiba	
Level of subordination of Head of Forestry within the Ministry	X	1st level subordination to Minister
		2nd level subordination to Minister
		3rd level subordination to Minister
		4th or lower level subordination to Minister
Other public forest agencies at national level	None	
Institution(s) responsible for forest law enforcement	➢ Forestry Agency, Ministry of agriculture, forestry and fisheries ➢ Forest-related divisions at prefectural and municipal governments	

Table 15b – Human resources

Original data

	2000	2005	2007
Forestry Agency [1)]	444	447	420
National Forest System [2)]	10,350	7,147	6,539
Prefectural governments [3)]	11,041	9,757	9,268
Municipal governments [3)]	4,392	3,643	3,306
Total	**26,227**	**20,994**	**19,533**

Sources:
1) Forestry Agency working document
2) Forestry Agency "National Forest Management Statistics"
3) Ministry of Internal Affairs and Communications, Local Administration Bureau "Local Government Capacity Management Survey"

FRA 2010 Category	Human resources within public forest institutions					
	2000		2005		2008	
	Number	%Female	Number	%Female	Number	%Female
Total staff	**26,227**	n.a.	**20,994**	n.a.	**19,533**	n.a.
...of which with university degree or equivalent	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.

Notes:
1. Includes human resources within public forest institutions at sub-national level
2. Excludes people employed in State-owned enterprises, education and research, as well as temporary / seasonal workers.

15.3 Comments to Table T15

Variable / category	Comments related to data, definitions, etc.	Comments on the reported trend
Minister responsible for forest policy formulation		
Level of subordination of Head of Forestry within the Ministry		
Other public forest agencies at national level		
Institution(s) responsible for forest law enforcement		
Human resources within public forest institutions		

Other general comments to the table

16 Table T16 – Education and research

16.1 FRA 2010 Categories and definitions

Term	Definition
Forest-related education	Post-secondary education programme with focus on forests and related subjects.
Doctor's degree (PhD)	University (or equivalent) education with a total duration of about 8 years.
Master's degree (MSc) or equivalent	University (or equivalent) education with a total duration of about five years.
Bachelor's degree (BSc) or equivalent	University (or equivalent) education with a duration of about three years.
Technician certificate or diploma	Qualification issued from a technical education institution consisting of 1 to 3 years post secondary education.
Publicly funded forest research centers	Research centers primarily implementing research programmes on forest matters. Funding is mainly public or channelled through public institutions.

16.2 National data

16.2.1 Data sources

References to sources of information	Quality (H/M/L)	Variable(s)	Year(s)	Additional comments
Ministry of Education, Culture, Sports, Science and Technology "School Basic Survey"	H	Number of new graduates by field of study (University, Master course)	2000 2005 2007	
Forestry Agency "Handbook of Forestry Statistics"	H	Number of researchers working in public forest research centres	2000 2005 2007	

16.2.2 Original data

Ministry of Education, Culture, Sports, Science and Technology, "School Basic Survey"

Number of new graduates		2000	2005	2007
Master's degree	Forestry	128	113	110
	Female	38	43	36
	Wood science	17	0	0
	Female	7	0	0
Bachelor's degree	Forestry	442	460	435
	Female	160	173	143
	Wood science	25	0	0
	Female	7	0	0

Forestry Agency, "Handbook of Forestry Statistics"

	Researchers working in publicly funded forest research centers					
	2000		2005		2007	
	Number	Female	Number	Female	Number	Female
Forestry and Forest Products Research Institute	437		407		445	

Forest research centers of prefectural governments (47 centers)	672		620		588	
Total	1,109		1,027		1,033	

16.3 Analysis and processing of national data

16.3.1 Estimation and forecasting

(1) Graduation of students in forest-related education:

(i) Numbers of graduates with Master's degree/Bachelor's degree for 2008 were estimated to be at the same level as the figures for 2007.

(ii) In Japan, there are several forest-related technical education programmes consisting of 2 years of post-secondary education. However, no data are available regarding the number of graduates with forest technician certificate/diploma. Therefore, the figure for 2008 was estimated by counting the latest number of students accepted to each school.

(2) Professionals working in publicly funded research centres:

Only data on the total number of professionals working in publicly funded research centres is available.

16.4 Data for Table T16

FRA 2010 Category	Graduation [1] of students in forest-related education					
	2000		2005		2008	
	Number	%Female	Number	%Female	Number	%Female
Master's degree (MSc) or equivalent	145	31.0	113	38.1	110	32.8
Bachelor's degree (BSc) or equivalent	467	35.8	460	37.6	435	32.9
Forest technician certificate / diploma	n.a.	n.a.	n.a.	n.a.	230	n.a.
FRA 2010 Category	**Professionals working in publicly funded forest research centres [2]**					
	2000		2005		2008	
	Number	%Female	Number	%Female	Number	%Female
Doctor's degree (PhD)	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Master's degree (MSc) or equivalent	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Bachelor's degree (BSc) or equivalent	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.

Notes:

1. Graduation refers to the number of students that have successfully completed a Bachelor's or higher degree or achieved a certificate or diploma as forest technician.
2. Covers degrees in all sciences, not only forestry.

16.5 Comments to Table T16

Variable / category	Comments related to data, definitions, etc.	Comments on the reported trend
Graduation of students in forest-related education		
Professionals working in public forest research centres	Only data on the total number of professionals working in publicly funded research centres is available.	

Other general comments to the table

17 Table T17 – Public revenue collection and expenditure

17.1 FRA 2010 Categories and definitions

Category	Definition
Forest revenue	All government revenue collected from the domestic production and trade of forest products and services. For this purpose, forest products include: roundwood; sawnwood; wood-based panels; pulp and paper; and non-wood forest products. As far as possible, this should include revenue collected by all levels of government (i.e. central, regional/provincial and municipal level), but it should exclude the income of publicly owned business entities.
Public expenditure	All government expenditure on forest related activities (further defined below).
Operational expenditure *(sub-category to Public expenditure)*	All government expenditure on public institutions solely engaged in the forest sector. Where the forest administration is part of a larger public agency (e.g. department or ministry), this should only include the forest sector component of the agency's total expenditure. As far as possible, this should also include other institutions (e.g. in research, training and marketing) solely engaged in the forest sector, but it should exclude the expenditure of publicly owned business entities.
Transfer payments *(sub-category to Public expenditure)*	All government expenditure on direct financial incentives paid to non-government and private-sector institutions, enterprises communities or individuals operating in the forest sector to implement forest related activities.
Domestic funding	Public expenditure funded from domestic public financial resources, including: retained forest revenue; forest-related funds; and allocations from the national budget (i.e. from non-forest sector public revenue sources).
External funding	Public expenditure funded from grants and loans from donors, non-governmental organisations, international lending agencies and international organisations, where such funds are channelled through national public institutions.

17.2 National data

17.2.1 Data sources

References to sources of information	Quality (H/M/L)	Variable(s)	Year(s)	Additional comments
Forestry Agency "Handbook of Forestry Statistics"	H	National forest system revenue, Forestry Agency total general account budget	2000 2005	

17.2.2 Classification and definitions

National class	Definition
National forest system revenue	Total of timber sales revenue, forest land sales revenue, and miscellaneous revenue.

17.2.3 Original data

National forest system revenue （Unit：1,000 yen）

	2000	2005
National forest system revenue	62,036,277	42,660,824
Operational revenue (timber sales etc)	30,120,104	21,416,109

Land sales revenue etc	22,897,623	13,740,315
Miscellaneous revenue	9,018,549	7,504,401

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

Public Expenditure （Unit：1,000 yen）

	2000	**2005**
Forestry Agency Total general account budget	644,834,551	501,598,990

17.3 Analysis and processing of national data

17.3.1 Calibration

Not necessary.

17.3.2 Estimation and forecasting

17.3.3 Reclassification into FRA 2010 categories

FRA 2005 Categories	**National Reporting Classes**
Forest revenue	National Forest System Revenue: ・Operational revenue (timber sales etc), ・Miscellaneous revenue
Public expenditure in forest sector	Total general account budget of Forestry Agency

17.4 Data for Table T17

Table 17a - Forest revenues

FRA 2010 Categories	**Revenues (1000 local currency)**	
	2000	**2005**
Forest revenue	39,138,654	28,920,509

Table 17b - Public expenditure in forest sector by funding source

FRA 2010 Categories	**Domestic funding (1000 local currency)**		**External funding (1000 local currency)**		**Total (1000 local currency)**	
	2000	**2005**	**2000**	**2005**	**2000**	**2005**
Operational expenditure	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Transfer payments	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Total public expenditure	644,834,551	501,598,990	n.a.	n.a.	644,834,551	501,598,990

If transfer payments are made for forest management and conservation, indicate for what specific objective(s) - Please tick all that apply.	X	Reforestation
	X	Afforestation
	X	Forest inventory and/or planning
	X	Conservation of forest biodiversity
	X	Protection of soil and water
	X	Forest stand improvement
	X	Establishment or maintenance of protected areas
	X	Other, specify below

	X Promotion of forestry and wood industry X Restoration from disasters X Prevention of insect pests/diseases and animal damage X Forest-related research and extension activities X Training/securing forestry workers X International cooperation in forest sector

17.5 Comments to Table T17

Variable / category	Comments related to data, definitions, etc.	Comments on the reported trend
Forest revenue		
Operational expenditure		
Transfer payments		

Other general comments to the table