Forestry Department
Food and Agriculture Organization of the United Nations

GLOBAL FOREST RESOURCES ASSESSMENT

COUNTRY REPORTS

CHINA

FRA2005/051
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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).

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Abbreviations

AG	Advisory Group to FRA
C&I	Criteria and Indicators (for Sustainable Forest Management)
CBD	Convention on Biological Diversity
CFDR	China forest development report
CFSY	China forest statistical yearbook
COFO	Committee on Forestry, the main statutory body of the FAO Forestry Department, meeting every second year in Rome
CSY	China statistical yearbook
CSD	United Nations Commission on Sustainable Development
DBH	Diameter at breast height
FAO	Food and Agriculture Organization of the United Nations
FAOSTAT	FAO Statistical Databases, see http://faostat.external.fao.org
FORM	Forest Resources Development Service
FRA	The FAO-led Global Forest Resources Assessment
FRA2000	Global Forest Resources Assessment 2000, see www.fao.org/forestry/fra2000report
FRA2005	Global Forest Resources Assessment update 2005, see www.fao.org/forestry/fra2005
IPCC	International Panel on Climate Change
ITTO	International Tropical Timber Organization
IUCN	The World Conservation Union
MDG	Millennium Development Goals
NC	National Correspondent to FRA
NFI	National Forest Inventory
NWFP	Non-wood forest products
OWL	Other wooded land
OLWTC	Other land with tree cover
SOFO	State of the World's Forests (FAO biennial publication)
UNEP	United Nations Environment Programme
UNFF	United Nations Forum on Forests
UNFCCC	United Nations Framework Convention on Climate Change
USD	United States Dollar
UNEP-WCMC	World Conservation Monitoring Centre (of UNEP)

Contents

Introduction

Being the main body of terrestrial ecosystem, forest is increasingly playing an important role in ecologic development and provision of forest products. It is helpful to carry out global forest resources assessment (FRA) for sustainable forest development.

This country report will elaborate the current situation and prospect of Chinese forest resources, national forest inventories system in China, and processing of development information at national level.

Background to FRA 2005

Resources and environment are the foundations of local living and sustainable development, which attracts great interest from the international community. Today, that the gross of global forest resources is decreasing year after year leads to climatic abnormity, increasing flood and erosion hazards, and contributing to the loss of plant and animal life. Therefore the forest resources conservation and sustainable forest management are becoming significant international issues.

Global forest resources assessment (FRA) has been carried out by FAO at periodical intervals since FAO was formed. Through the forest resources assessment programme, FAO draws focused attentions in monitoring of the world's forest resource, dynamics of forest resources, criteria and indicators for the protection and utilization of forest resources, and position of forest ecosystem in the study on global change and carbon cycle.

The mandate to carry out FRA, stems both from the basic statutes of FAO, and from the decision of the Committee on Forestry (COFO). The global forest resources assessment update for 2005, or FRA2005, was requested by COFO 2001 and COFO 2003, where it was recommended that FRA should: (a) be carried out at 5 year intervals, (b) be related to international forestry processes and (c) be implemented as a broadly based assessment.

Purpose of the Country Report

China is one of the richest forest resources Countries in the world in terms of forest area, volume and plantation area. Forest resources in China is taking up a vital position in the world, and acting as an important role in global ecological conservation and sustainable development of economy.

Participating in global forest resources assessment provides a good chance for China reporting the latest results of Chinese forestry development to the relevant international agencies and organizations, and can contribute to make sure national responsibility in international conventions such as the Kyoto protocol.

National Forest Inventory in China

National figures about forest resources in China are obtained through national forest inventories (NFI) system, the overall objectives of NFI are to assess and monitor the status and trend of macro forest resources regularly at five years period, and give strong support for formulation of national policies for forestry and related sectors.

NFI system is carried out by the provinces (autonomous region or municipalities) throughout the country since 1973 at five years intervals, based on fixed ground sample plots and regular measuring. Up to 2003, 6 national forest inventories have been conducted, including the 1st NFI (1973-1976), the 2nd NFI (1977-1981), the 3rd NFI (1984-1988), the 4th NFI (1989-1993), the 5th NFI (1994-1998) and the 6th NFI (1999-2003). The latest NFI is put into practice at the beginning of 2004. The reference years of NFI applied to Chinese forest resources assessment are 1986, 1991, 1996 and 2001 respectively.

In last 20 years, due to technological and methodological developments, the currently implemented NFI exhibit considerable advances in many aspects such as the technical approaches, the products generated, and intensity and organization of the inventory. New technologies and methodologies such as remote sensing, GPS, GIS, and modelling methods are widely used for NFI, which improve efficiency and quality of measurement.

The 6th NFI is conducted from 1999 to 2003. 415 thousands fixed ground sample plots were established throughout the whole country, 0.0667 ha in size and the shape such as square, rectangular, round or diamond plots. The plots density changes from 2*2 km^2 to 8*8 km^2, the number of factors surveyed in each plots is beyond fifty, like land types, ownership, designated function, characteristics, tree name, age, height, diameter at breast height, canopy cover, disturbance, health, etc..

Work on National Forest Resources Assessment in China

According to FRA 2005, country-level FRA process of China is composed of three main phases, namely design and test, compilation of report, and validation of results and approval. In order to compile the country report, a multidisciplinary team is formed, involving ten experts or researchers. The participants took about 8 months to prepare the draft country report.

Design and Test

A multidisciplinary team was formed for FRA 2005, the members of which come from several disciples related to the Country Report of FRA 2005 and undertook many works including learning FRA 2005 documents such as *Guidelines for Country Reporting to FRA2005* and *Specification of National Reporting Tables for FRA2005*, making specification and work planning, and studying evaluation methods and validating them to make sure appropriate approaches for FRA.

Compilation of the Country Report

Standard country report following a set of pre-defined reporting tables is presented. Among 15 country reporting tables, complete national data could be provided for table T1, T2, T3, T4, T5, T6, T7, T8, T9, T10, T11, T15, and partial national data for table T12, T13. Further, no data is provided for Table 14 due to insufficiency of information relating to the price of non wooded forest products.

Table A: Country reporting tables with sufficient national figures

Table	Title	Reporting Unit
T1	Extent of Forest and Other Wooded land	1000 ha
T2	Ownership of Forest and Other wooded land	1000 ha
T3	Designated Functions of Forest and Other wooded land	1000 ha

T4	Characteristics of Forest and Other wooded land	1000 ha
T5	Growing stock	Million m^3
T6	Biomass stock	Million metric tonnes
T7	Carbon stock	Million metric tonnes
T8	Disturbances affecting health and vitality	1000 ha
T9	Diversity of tree species	Number
T10	Growing stock composition	Million m^3
T11	Wood removal	1000 m^3
T15	Employment in forestry	1000 person- year

Table B: Country reporting tables with partial figures or insufficient data

Table	Title	Reporting unit
T12	Value of wood removal	1000 USD
T13	Non wood forest product removal	Mass/volume/units
T14	Value of non wood forest product removal	1000 USD

Methodology for Country Reporting to FRA 2005

A standard methodology of documentation and reporting has been developed by FAO in order to keep validity, transparency and traceability of the Country Report. Considering the real status of Chinese forest resources, the Country Report is presented with NFI data and other thematic statistical information, the methods and process follow the reference documentations such as *Guidelines for Country Reporting to FRA 2005* and *Specification of National Reporting Tables for FRA 2005*.

Data Sources

Based on the requirements of each specific table for FRA 2005, all potentially useful data sources are identified and evaluated according to content, completeness and quality.

- National forest inventory data composed of national data from the 3rd NFI, the 4th NFI, the 5th NFI, and 6th NFI.
- Forestry thematic statistics, which provide the thematic figures, for example, forest disturbance, rare species under endangering, removal of forest products and their value, and employment in forest industry.
- others such as journals, research materials and investigation reports, mainly coming from forestry research institutes, universities and socially economic organizations.

Analysis of National Data

This step comprises two steps that may or may not be necessary to carry out, depending on the characteristics of available national data.

Calibration

Its purpose is to make sure that reported area and area-related quantitative figures are consistent. In the Country Report, country area should match with the reported area according to the official, namely 9 600 000 km^2.

Estimation and Forecasting

The reference years 1990, 2000 and 2005 are requested for the Country Report, estimation and forecasting are used to obtain relevant forest resources figures for every reference year.

● Averaging

Since 1949, China has compiled annual statistics on removals of forest resources products and their value and employment in forestry that are calculated for table T11, T12, T13 and T15. The reported figures for 1990 and 2000 are based on an average of a five period in order to take the annual variations into account. Among them, the figures for reference year 1990 are the average of 1988 to 1992, and data from 1998 to 2002 for 2000.

● Estimation

Estimation is the process of interpolation between observations, and can be applied with the existing data sources in succession, including:

- Estimation is performed for the reference year 1990, when the 3rd NFI data, together with that of the 4th NFI, are a part of input to global forest assessments;
- Estimation is also necessary for the reference year 2000 with the national data from 5th NFI and 6th NFI.

● Forecasting

According to the trend of forest development, figures abut forest resources in 2005 are forecasted by statistical models. In last 5 years, forestry development in China is driving on a fast lane due to energetic policies of forestry and large investment supporting for forestry development. Six key forestry programs have been carried into execution at the beginning of 21st century, including Natural Forest Protection Program, the Program for Conversion of Cropland to Forest Land, Shelterbelt Development Program in Such Regions as China's "Three-north" and Yangtze river basin areas, the Sandification Control Program for Areas in the Vicinity of Beijing and Tianjin, the Wildlife Conservation and Nature Reserves Development Program, and the Forest Industrial based Development Program in Key Regions with a Focus on Fast-growing and High-yielding Timber Plantations. The implementation of these programmes is a leap forward development in forestry and due to this the gross forest resources are rapidly increasing.

As a result, forecasting of forest resources in 2005 should be integrated information from the 6th NFI and dynamics of forest resources during recent 3-5 years in order to describe the real situations of Chinese forest resources.

●Reclassification

In order to make national data consistent with the categories defined for FRA 2005, reclassifying

the national data from the reference years is necessary by carrying out using a "reclassification matrix". In this country report, reclassification aims at land use type, designated function, characteristics, forest products and employment and so on.

For reclassification, the key process is the establishment of reclassification matrix, in which each class is assigned a percentage that apply to each FRA category, the value of percentage is based on the differential analysis between national classes and FRA categories, and expert knowledge.

1 Table T1 - Extent of Forest and Other wooded Land

1.1 FRA2005 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.** Explanatory notes 1. Forest is determined both by the presence of trees and the absence of other predominant land uses. The trees should be able to reach a minimum height of 5 meters *in situ*. Areas under reforestation that have not yet but are expected to reach a canopy cover of 10 percent and tree height of 5 m are included, as are temporarily unstocked areas, resulting from human intervention or natural causes that are expected to regenerate. 2. Includes areas with bamboo and palms provided that height and canopy cover criteria are reached 3. Includes forest roads, firebreaks and other small open areas; forest in national parks, nature reserves and other protected areas such as those of specific scientific, historical, cultural or spiritual interest 4. Includes windbreaks, shelterbelts and corridors of trees with an area of more than 0.5 ha and width of more than 20 m 5. Includes plantations primarily used for forestry or protection purposes, such as rubber-wood plantations and cork oak stands. 6. Excludes tree stands in agricultural production systems, for example in fruit plantations and agroforestry systems. The term also excludes trees in urban parks and gardens.
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 Lan**d". Explanatory notes 1. Includes agricultural land, meadows and pastures, build-on areas, barren land, etc. 2. If a country has areas with meadows and pastures that are difficult to classify whether they should belong to "Forest"/"Other wooded land" or to "Other land", the country should explain the criteria used and how this classification is done. 3. Includes areas classified under the sub-category "Other land with tree cover" 4. Includes areas with bamboo and palms provided that height and canopy cover criteria are reached
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.** Explanatory notes 1. Includes groups of trees and scattered trees in agricultural landscapes, parks, gardens and around buildings, provided that the canopy cover criteria is met 2. Includes tree plantations established mainly for other purposes than wood, such as fruit orchards and palm plantations
Inland water	**Inland water bodies generally include major rivers, lakes and water reservoirs.**

1.2 National Data

1.2.1 Data source

Reference	Quality (H/M/L)	Variable	Year	Additional comments
National forest resources statistics (1984-1988)	H	Extent	1986	The 3rd NFI
National forest resources statistics (1989-1993)	H	Extent	1991	The 4th NFI
National forest resources statistics (1994-1998)	H	Extent	1996	The 5th NFI
National forest resources statistics (1999-2003)	H	Extent	2001	The 6th NFI
China Statistical Yearbook	H	Country area	2003	Statistics
China Forestry Development Report	H	Plantation area	2003	Report

1.2.2 Classification and definitions

Category	Definition
Arbor forest	Forest land of arbor species spanning more than 0.0667 ha with a canopy cover of more than 20%.
Economic forest	Forest land of economic species spanning more than 0.0667 ha with canopy cover of more than 20%. The mainly purpose is the provision of non-wooded forest products and fruit.
Bamboo forest	Forest land spanning more than 0.067 ha, growing bamboo species with the diameter at breast height over 2 cm.
Open forest land	Land of arbor species with canopy cover of which is between 0.10 and 0.19, and 0.0667 ha in size.
Shrub land	Area spanning more than 0.0667 ha with canopy cover of which less than 0.1 and the combined cover of shrub, bushes and tree is more than 30 percent.
Unestablished forest	Areas under afforestation that are temporarily unstocked areas, but can reach the thresholds of forest land during four years; and plot size is more than 0.0667 ha.
Nursery land	Land for cultivating sapling.
Cut-over area or fired-over area	Areas under felling/fired that haven't got to above thresholds, but can become forest land in four years.
Forest suitable land	Area planning for planting, including wild land and sandy land liable to forest. Its canopy cover is less than 0.1, and a combined cover of shrub, bushes and trees less than 30 percent, however, generally more than 10 percent.
Other land	Non-forestry land, including inland water.

1.2.3 Original data

Land use	Area (1000 ha)			
	1986	1991	1996	2001
Arbor forest	107248.8	113700	134355.7	144736.8
Economic forest	13743.8	16098.8	20222.1	21390
Bamboo forest	3660.2	3904.7	4363.1	4994.9
Open forest land	19636.5	18025.7	7195	5999.6
Shrub forest	28116	29706.3	34445.7	45296.8
Unestablished stands	7288.1	7138.3	4615.1	4893.6
Nursery land	184.5	114.9	122.5	270.9
Cut-over area	3096	2756.8	2506	1802.3
Fired-over area	1334.6	912.8	600.8	807.8
Forest suitable land	82181.6	69591.4	53929.9	54713.1
Other land	693509.9	698050.3	697644.1	675094.2
Total	960000	960000	960000	960000

1.3 Analysis and Processing of National Data

1.3.1 Calibration

The total country area does not match with FAOSTAT. Therefore, calibration is necessary, and for FRA 2005 reporting only the total country area and the area of inland water bodies has been adopted from FAOSTAT.

Land use	**Area (1000 ha)**			
	1986	**1991**	**1996**	**2001**
Arbor forest	107248.8	113700	134355.7	144736.8
Economic forest	13743.8	16098.8	20222.1	21390
Bamboo forest	3660.2	3904.7	4363.1	4994.9
Open forest land	19636.5	18025.7	7195	5999.6

Shrub forest	28116	29706.3	34445.7	45296.8
Unestablished stands	7288.1	7138.3	4615.1	4893.6
Nursery land	184.5	114.9	122.5	270.9
Cut-over area	3096	2756.8	2506	1802.3
Fired-over area	1334.6	912.8	600.8	807.8
Forest suitable land	82181.6	69591.4	53929.9	54713.1
Inland water bodies	27063	27063	27063	27063
Other land	666251.9	670792.3	670386.1	647836.2
Total	959805	959805	959805	959805

1.3.2 Estimation and forecasting

● Estimation

$$Value_{1990} = Value_{1991} - (Value_{1991} - Value_{1986}) / 5 \quad (1\text{-}1)$$

$$Value_{2000} = Value_{2001} - (Value_{2001} - Value_{1996}) / 5 \quad (1\text{-}2)$$

Land use	**Area (1000 ha)**	
	1990	**2000**
Arbor forest	112409.8	142660.6
Economic forest	15627.8	21156.4
Bamboo forest	3855.8	4868.5
Open forest land	18347.9	6238.7
Shrub forest	29388.2	43126.6
Unestablished stands	7168.3	4837.9
Nursery land	128.8	241.2
Cut-over area	2824.6	1943.0
Fired-over area	997.2	766.4
Forest suitable land	72109.5	54556.5
Other land	697142.1	679604.2
Total	960000	960000

● Forecasting

Due to different change pattern of forest and other wooded land in recent 5 years, forecasting models of land area for the reference year 2005 are established, based on land use type. And in order to describe the real situation of forest resources in 2005, information from the 6th NFI is integrated with changes of forest resources during recent 4 years to forecast forest resources in 2005, as the following equations showing:

1. Area of arbor forest in 2005:

$$Area = area_{2001a} + area_{af} \times rate_{arbor} \times rate_{p} + area_{refn} - area_{asub} \quad (1\text{-}3)$$

Where,

(a) *Area*, the area of arbor forest in 2005,

(b) $area_{2001a}$, the area of arbor forest in 2001,

(c) $area_{af}$, the area of afforestation from 2002 to 2005. According to specification of NFI in China, afforestation land which is not yet got to the thresholds of forest land during 4 years is summed as unestablished forest, not classified as arbor forest. So the total afforestation area during 1998 to 2001 is used to calculate arbor forest area in 2005, and that

after 2001 is calculated as unestablished forest. The value are of afforestation from 1998 to 2001 is 13908.4 thousand hectares,

(d) $rate_{arbor}$, the percentage (93%) of arbor afforestation in $area_{af}$,

(e) $rate_p$, the forested rate (75%),

(f) are_{refn}, the forested area by natural regeneration from 2002 to 2005. For not available figures on area forested by natural regernation since 2003, it is assumed that the average forested area by natural regeneration per year from 2002 to 2005 is similar to that during the 6th NFI. The average annual area forested by natural regeneration is estimated by dividing the total area forested by NFI period (5 years). And are_{refn} is the product of the average area and 4 years,

(g) $area_{asub}$, the area of arbor forest converted to other land uses from 2002 to 2005. It has been assumed that the average area of arbor forest converted to other land uses per year from 2002 to 2005 is similar to that during the 6th NFI, which is estimated by dividing the total area by NFI period (5 years). And $area_{asub}$ is the product of the average area and 4 years.

2. Area of economic forest in 2005

$$Area = area_{2001a} + area_{af} \times rate_p - area_{asub} \quad (1\text{-}4)$$

Where,

(a) *Area*, the area of economic forest in 2005,

(b) $area_{2001a}$, the area of economic forest in 2001,

(c) $area_{af}$, the area of afforestation from 2002 to 2005. The information about national afforestation area of economic species from 2004 to 2005 is not available. Therefore, it has been assumed that the average afforestation area of economic species per year from 2002 to 2005 is similar to that from 2001 to 2003. The amount of estimated afforestation of economic trees is 2002 to 2005 and from 2001 to 2003 is 3708.8 thousand hectares,

(d) $rate_p$, the forested rate (75%),

(e) $area_{asub}$, the area of economic forest converted to other land uses from 2002 to 2005. Due to non availability of the information on the area of economic forest converted to other land uses from 2002 to 2005, it has been assumed that the average converted area is similar to that per year during the 6th NFI. And $area_{asub}$ is the product of the average area and 4 years.

3. Area of bamboo forest in 2005

$$Area = area_{2001a} + area_{af} \times rate_p - area_{asub} \quad (1\text{-}5)$$

Where,

(a) *Area*, the area of bamboo forest in 2005,

(b) $area_{2001a}$, the area of bamboo forest in 2001,

(c) $area_{af}$, the area of afforestation from 2002 to 2005. The information about area of bamboo afforested from 2004 to 2005 Is not available. Therefore, it has been assumed that the average afforested area of bamboo per year from 2002 to 2005 is similar to that from 2001 to 2003. The total amount of bamboo afforestation area from 2002 to 2005 is 461.1 thousand hectares, and that from 2001 to 2003 is 445.8 thousand hectares,

(d) $rate_p$, the forested rate (75%),

(e) $area_{asub}$, the area of bamboo forest converted to other land uses from 2002 to 2005. The information about the total area of bamboo forest converted to other land uses from 2002 to 2005 is not available. Therefore, it has been assumed that it is same as the average converted bamboo forest area per year during the 6th NFI. And $\mathbf{area_{asub}}$ is the product of the average area and 4 years.

4. Area of open forest land, shrub land, nursery land and cut-over area

The area of open forest land, shrub land, nursery land and cut-over area for 2005 is calculated by extrapolation method.

5. Area of unestablished stands in 2005

Unestablished stands is afforestation area where the years of afforestation less than 4 years are, and trees on the land have not reached the thresholds of arbor forest or open forest land. According to land use classification of NFI, it not belong to above categories of forest, however, should be classified as "forest" corresponding to forest definition from FRA 2005. Area of unestablished stands in 2005 is forecasted with Eq. (1-6).

$$Area = area_{f3} \times rate_{arbor} \times rate_r \quad (1\text{-}6)$$

Where,

(a) *Area*, the area of unestablished stands in 2005,

(b) $area_{f3}$, the area of afforestation from 2002 to 2004,

(c) $rate_{arbor}$, the percentage of arbour afforestation (86%) in $area_{f3}$,

(d) $rate_r$, the eligible rate of afforestation (87%).

Due to the absent of the new planting area in 2004, it is assumed that the average planting area from 2002 to 2004 is same as that during 2001 to 2003, the total planting area from 2002 to 2004 is 18 967.2 thousand ha

6. Area of fired-over area in 2005

$$Area = (area_{f1996} + area_{f2001})/2 \quad (1\text{-}7)$$

Where, *Area* is the area of fired-over land in 2005, $area_{f1996}$ the area of fired-over land in 1996, and $area_{f2001}$ the area of fired-over land in 2001.

7. Area of forest suitable land in 2005

The area of forest suitable land in 2005 (Area) is forecasted by subtracting the afforestation area in the forest suitable land from 2002 to 2005 from the area of forest suitable land in 2001. Due to effect of the Program for Conversion of Cropland to Forest Land, the afforestation area after 2001 includes the new planting in the forest suitable land and cropland. The afforestation area in forest suitable land after 2001 is the difference between the new afforestation area and the area of other land use types converting to forest land from 2002 to 2005, as the following equation showing

$$Area = area_{2001a} - (area_{af} - area_{ff}) \quad (1\text{-}8)$$

Where,

(a) $Area_{2001a}$ is the area of forest suitable land in 2001,

(b) $area_{af}$, the sum of afforestation area from 2002 to 2005. The information on the afforestation area from 2004 to 2005 is not available. Therefore, the sum of afforestation area from 2002 to 2005 has been assumed to be the same as that from 2000 to 2003 (26948 thousand ha).

(c) $area_{ff}$, the sum of area converting land to forest from 2002 to 2005. The information on the sum of area converting to forests from 2004 to 2005 is not available. Therefore, it has been assumed that the average conversion of other land to forest during 2002 to 2005 will be same as it was during 1998 to 2001 (5871.7 thousand ha).

With the above models, area of forest and other wooded land in 2005 is forecasted, showed in the following table:

Land use	**Area (1000 ha)**
	2005
Arbor forest	153872.4
Economic forest	22427
Bamboo forest	5444.1
Open forest land	5043.3
Shrub forest	53977.7
Unestablished stands	14225.4
Nursery land	389.6
Cut-over area	1239.3
Fired-over area	704.3
Forest suitable land	33636.8
Inland water bodies	27063
Other land (including inland water)	641782.1
Total	959805

1.4 Reclassification

Land use (China)	**FRA 2005**					
	Forest	Other wooded land	Other land	Inland water	Total	OLWTC[2]
Arbor forest	100%				100%	
Economic forest[1]	73%		27%		100%	ID[3]
Bamboo forest	100%				100%	
Open forest	100%				100%	
Shrub land		100%			100%	
Unestablished stands	100%				100%	
Cut-over area	100%				100%	
Nursery land	100%				100%	
Fired-over area[4]	100%				100%	
Forest suitable land		100%			100%	
Other land (excluding inland water)			100%		100%	ID
Inland water				100%	100%	

(Note: **1)** 73% of economic forest is classified as forest, and the remainder (fruit forest) classified as other land. **2)** Without available information about "other land with tree cover". **3)** ID denotes "Insufficient Data". **4)** Fired-over area is area under fired that has not reached the thresholds of open forest land without planting, or will not become arbor forest through natural regeneration, but stands on it will be closed during 4 years. Scattered trees and young trees by natural regeneration are widely distributed in fired-over area, the current canopy cover of trees is less than 0.1, and the average height of trees may be less than 5 m. But trees in fired-over area

can meet the thresholds of forest during 4 years. Although it is not classified as forest in land use classification of NFI, however, fired-over area should be classified as forest according to FRA2005 definition about forest.)

1.5 National Reporting Table T1

FRA2005 categories	Area (1000 ha)		
	1990	2000	2005
Forest[1]	157141	177001	197290
Other wooded land	101498	97683	87615
Other land	674103	658058	647837
Of which with tree cover[2]	ID	ID	ID
Inland water[3]	27063	27063	27063
Total[3] Country Area	959805	959805	959805

(Note: [1)] forest spanning more than 0.0667 ha in China; [2)] There is not available information about "other land with tree cover"; [3)] The figures of total Country area and inland water bodies have been taken from FAOSTAT for the purposes of FRA2005 only.)

1.6 Comments to National Reporting Table T1

(1) Because of more investment in forest sector, especially implement of six key forestry programmes and improved forest resources management, the gross of forest resources has been increasing in a faster speed since 2000.

(2) According to NFI system, the least area for surveying is no less than 0.067 ha, and it is difficult to estimate the plot area between 0.0667 ha and 0.5 ha.

(3) 73% of economic forest is classified as forest, the remainder (fruit forest) is excluded from "forest", and calculated as "Other land". Because specific investigation of sub-category "Other land with tree cover" isn't carried in China at present, insufficient information is provided for it. Thus, fruit trees in economic forest just take a part of "Other land with tree cover", far less than the actual area of "Other land with tree cover" in China. As a result, "other land with tree cover" in other land is filled with "ID".

(5) The figures of total country area and inland water bodies taken from FAOSTAT in table 1 is not yet confirmed by Chinese official authorities, due to not match with the official figures in China.

2 Table T2 - Ownership of Forest and Other wooded Land

2.1 FRA2005 Categories and definitions

Ownership	Definitions
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 Explanatory Note 1. Includes ownership by tribal or other indigenous groups of people.
Private ownership	Land owned by individuals, families, private co-operatives, corporations, industries, religious and educational institutions, pension or investment funds, and other private institutions Explanatory notes 1. Private owners may be engaged in agriculture or other occupations including forestry.
Other ownership	Land that is not classified either as "Public ownership" or as "Private ownership". Explanatory Note 1. Includes land where ownership is not defined.

2.2 National data

2.2.1 Data sources

Reference	Quality (H/M/L)	Variable	Year	Additional comments
National forest resources statistics (1984-1988)	H	Ownership	1986	The 3rd NFI
National forest resources statistics (1989-1993)	H	Ownership	1991	The 4th NFI
National forest resources statistics (1994-1998)	H	Ownership	1996	The 5th NFI
National forest resources statistics (1999-2003)	H	Ownership	2001	The 6th NFI

2.2.2 Categories and definitions

Differing from FRA2005, ownership of forest and other wooded land includes ownership of land and trees In China. Here, both of them are presented.

Ownership	Definitions
State	Owned by the State and state-owned institutions and enterprise.
Collective	Owned by villages and communities.
Private	Owned by individuals, families, private co-operatives, corporations, and other private institutions.

2.2.3 Original data

A. Land ownership

Ownership of land	Area (1000 ha)[2]			
	1986	1991	1996	2001
State[1]	103235.8	106117.4	107697.3	112614.7
Collective	159543.5	150778.5	149198.6	166515.8
Total	262779.3	2576032	256895.9	279130.5

Note: [1)] Land in China is owned by state and collective.

[2)] Excluding area of fruit forest.

B. Tree ownership

Investigation of tree ownership is only carried out in 2001, as the following table showing:

Land use (FRA2005)	Area (1000 ha)[1]			
	State	Collective	Private	Total
Forest	76062	68703.8	34354.8	179120.6
Other wooded land	37806.9	59049.6	3153.4	100009.9
Total	113868.9	127753.4	37508.2	279130.5[1]

2.3 Analysis and Processing of national data

2.3.1 Calibration

Not necessary

2.3.2 Estimation and forecasting

● Estimation:

(1) Estimation models are same as (1-1) and (1-2).

(2) The figures on area by tree ownership in 2000 are from the 6th NFI.

Ownership of land	Ownership of tree (1000 ha)					
	Forest			Other wooded land		
	1990[1]	2000[2]		1990[1]	2000[2]	
	Public	Public	Private	Public	Public	Private
Public	157140.7	143052.3	33948.2	101497.7	94603.1	3080

2.4 Reclassification

2.4.1 Reclassification matrix

A. Reclassification matrix about land ownership

Ownership	Public	Private	Others	Total
State	100%			100%

B. Reclassification matrix about tree ownership

Ownership	Public	Private	Others	Total
Collective	100%			100%
State	100%			100%
Private		100%		100%

2.5 Data for National Reporting Table T2

FRA 2005 Categories	Area (1000 hectares)			
	Forest		Other wooded land	
	1990	2000	1990	2000
Private ownership.				
Public ownership	157141	177001	101498	97683
Other ownership				
TOTAL	157141	177001	101498	97683

(Note: All of lands in China are owned by state and collective)

2.6 Comments to National Reporting Table T2

(1) All land in China is owned by state and collective.

(2) For survey of trees ownership is only carried out in 2001, trees ownership structure in 2000 is identified as that in 2001.

3 Table T3 - Designated Functions of Forest and Other wooded Land

3.1 FRA2005 Categories and Definitions

3.1.1 Type 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 side for specific purposes.** Explanatory notes: 1. When reporting on "Primary function", the sum of areas should match with totals from table T1. 2. The category "Multiple purpose" is considered as primary function when legal prescriptions and/or landowner decisions explicitly assigns functions that correspond to two or more of the designation categories and where none of these is significantly more important than the others.
Total area with function	**Total area where a specific function has been designated, regardless whether it is primary or not.** Explanatory notes: 1. When reporting on "Total area with function", the designation categories are not exclusive. Hence, areas can be counted more than once e.g.: a) Areas with "Multiple purpose" as primary function should be counted once for each specific function included in the "Multiple purpose". b) Areas with a specific designated primary function should be counted more than once if other, less significant, functions also have been designated 2. This column does not apply to the categories "Multiple purpose" and "No or unknown function".

3.1.2 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

Reference	Quality (H/M/L)	Variable	Year	Additional comments
National forest resources statistics (1984-1988)	H	Designated function	1986	The 3rd NFI
National forest resources statistics (1989-1993)	H	Designated	1991	The 4th NFI

		function		
National forest resources statistics (1994-1998)	H	Designated function	1996	The 5th NFI
National forest resources statistics (1999-2003)	H	Designated function	2001	The 6th NFI

3.2.2 Categories and definitions

Category	Definitions
Timber forest	Forest land supplying industrial wood.
Protection forest	Forest land designated for ecological protection.
Firewood forest	Forest land yielding heat energy materials.
Economic forest	Forest land only for non-wood forest product, not include fruit forest.
Special purpose forest	Forest land mainly for tree species resources conservation, ecological environment protection, forest tour and scientific experiments ., including experimental forest, reserved-seed forest, environmental protection forest, scenic forest and natural protection forest.

3.2.3 Original data

Designated function	Area (1000 ha)			
	1986	1991	1996	2001
Timber forest	80069.6	84928.6	99395	78625.8
Protection forest	19619.1	21134.7	26541	56696.4
Firewood forest	4443.8	4288.6	4451.7	3034.4
Special purpose forest	3116.3	3348.1	3968	6380.2
Economic forest[1]	10033	11752.1	14762.1	15614.7
Bamboo forest	3660.2	3904.7	4363.1	4994.9
Open forest land	19636.5	18025.7	7195	5999.6
Shrub land	28116	29706.3	34445.7	45296.8
Unestablished stands	7288.1	7138.3	4615.1	4893.6
Nursery land	184.5	114.9	122.5	270.9
Cut-over area	3096	2756.8	2506	1802.3
Fired-over area	1334.6	912.8	600.8	807.8
Forest suitable land	82181.6	69591.4	53929.9	54713.1
Total	262779.3	257603	256895.9	279130.5

Note: [1)] Excluding fruit forest.

3.3 Analysis and Processing of National data

3.3.1 Calibration

Not necessary.

3.3.2 Estimation and forecasting

● Estimation:

The estimating equations are the same as (1-1) and (1-2).

● **Forecasting:**

(1) The same equation as Table 1
(2) The percentage of designated functions for forest and other wooded land equals that of the 6th NFI.

Designated function	Area (1000 ha)		
	1990	2000	2005
Timber forest	83956.8	82779.6	83588.6
Protection forest	20831.7	50665.3	60275
Firewood forest	4319.6	3317.9	3225.9
Special purpose forest	3301.7	5897.8	6782.9
Economic forest	11408.3	15444.2	16371.7
Bamboo forest	3855.8	4868.5	5444.1
Open forest land	18347.9	6238.7	5043.3
Shrub land	29388.2	43126.6	53977.7
Unestablished stands	7168.3	4837.9	14225.4
Nursery land	128.8	241.2	389.6
Cut-over area	2824.6	1943	1239.3
Fired-over area	997.2	766.4	704.3
Forest suitable land	72109.5	54556.5	33636.8
Total	258638.4	274683.6	284904.6

3.4 Reclassification

3.4.1 Reclassification matrix for primary functions

Designated function[1] (China)	Category (FRA 2005)[2]											
	Forest						Other wooded land					
	Prd	Prt	Con	Soc	Mlt	Un	Prd	Prt	Con	Soc	Mlt	Un
Timber forest	100%											
Protection forest[3]		90%			10%							
Firewood forest	100%											
Special purpose forest[4]			70%	30%								
Economic forest	100%											
Bamboo forest					100%							
Open forest land[5]	56%	39%	3.5%	1.5%								
Shrub land								100%				
Unestablished stands[5]	56%	39%	3.5%	1.5%								
Nursery land	100%											
Cut-over area					100%							
Fired-over area					100%							
Forest suitable land											100%	

(Note: [1)] In China, the object for functions designation is arbor forest. [2)] Prd denotes production, Prt is protection of soil and water, Con is conservation of biodiversity, Soc is the abbreviation of social services, Mlt means multiple purpose, and Un represents no or unknown function. [3)] Protection forest is divided into protection of soil and water and special purpose forest, the percentage of them is based on expert knowledge. [4)] 70% of special purpose forest is classified as conservation of biodiversity, and 30% of which is classified as social services, both of them are also based on expert estimation; [5)] Functions of open forest land, unestablished stands are designated with the same percentage of arbor forest.)

3.4.2 Reclassification matrix for total area with function

Forest	Production	Protection of soil and water	Conservation of biodiversity	Social services
PRODUCTION	100%	90%[1]		
Protection of soil and water	100%	100%	100%	
Conservation of biodiversity		100%	100%	
Social services		100%	100%	100%
Multiple purpose	100%	100%	100%	100%

Note: [1)] The percentage of protection of soil and water in production forest is based on expert knowledge

3.5 National Reporting Table T3

Land use/ Designated function（FRA2005）	Area (1000 ha)					
	Primary function			Total area with function		
	1990	2000	2005	1990	2000	2005
Forest						
Production	114103	107986	114366	152563	170549	189544
Protection of soil and water	28700	49919	61762	145730	166202	185853
Conservation of biodiversity	3204	4516	5422	43038	69015	82924
Social services	1373	1935	2324	11134	14580	15739
Multiple purpose	9761	12645	13415	Not appl.	Not appl.	Not appl.
No or unknown function				Not appl.	Not appl.	Not appl.
Total –forest	**157141**	**177001**	**197290**	Not appl.	Not appl.	Not appl.
Other wooded land						
Production				101498	97683	87615
Protection of soil and water	29388	43127	53978	101498	97683	87615
Conservation of biodiversity				101498	97683	87615
Social services				72110	54557	33637
Multiple purpose	72110	54556	33637	Not appl.	Not appl.	Not appl.
No or unknown function				Not appl.	Not appl.	Not appl.
Total-other wooded land	**101498**	**97683**	**87615**	Not appl.	Not appl.	Not appl.

3.6 Comments to National Reporting Table T3

(1) The percentage of designated functions for other wooded land comes from the 6th NFI.
(2) The percentage of protection of soil and water in production forest is based on expert knowledge

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. Explanatory notes: 1. Includes areas where collection of non-wood forest products occurs, provided the human impact is small. Some trees may have been removed.
Modified natural	Forest / Other wooded land of naturally regenerated native species where there are clearly visible indications of human activities. Explanatory notes: 1. Includes, but is not limited to: Selectively logged-over areas, areas regenerating following agricultural land use, areas recovering from human-induces fires, etc. 2. Includes areas where it is not possible to distinguish whether the regeneration has been natural or assisted.
Semi-natural	Forest / Other wooded land of native species, established through planting, seeding or assisted natural regeneration. Explanatory notes: 1. Includes areas under intensive management where native species are used 2. Naturally regenerated trees from other species than those planted/seeded may be present 3. May include areas with naturally regenerated trees of introduced species
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. Explanatory notes: 1. Includes all stands of introduced species established for production of wood or non-wood goods. 2. May include areas of native species characterized by few species, straight tree lines and/or even-aged stands
Protective plantation	Forest / Other wooded land of native or introduced species, established through planting or seeding mainly for provision of services. Explanatory notes: 1. Includes all stands of introduced species established for provision of services, such as soil and water protection, pest control and conservation of (habitat) biological diversity. 2. Includes areas of native species characterized by few species, straight tree lines and even-aged stands

4.2 National Data

4.2.1 Data sources

Reference	Quality (H/M/L)	Variable	Year	Additional comments
National forest resources statistics (1984-1988)	H	Characteristics	1986	The 3rd NFI
National forest resources statistics (1989-1993)	H	Characteristics	1991	The 4th NFI
National forest resources statistics (1994-1998)	H	Characteristics	1996	The 5th NFI
National forest resources statistics (1999-2003)	H	Characteristics	2001	The 6th NFI

4.2.2 Categories and definitions

Category	Definition
Natural forest	Forest / Other wooded land established through natural regeneration.
Plantation	Forest / Other wooded land of native species or introduced, established through planting, seeding or assisted natural regeneration.

4.2.3 Original data

Land use/ Characteristics	Area (1000 ha)			
	1986	1991	1996	2001
Natural forest[1]	93219	99029.3	111851.4	117441.8
Plantation[1]	27723	30327.5	41629.5	47904.6
Open forest land	19636.5	18025.7	7195	5999.6
Shrub land	28116	29706.3	34445.7	45296.8
Unestablished stands	7288.1	7138.3	4615.1	4893.6
Nursery land	184.5	114.9	122.5	270.9
Cut-over area	3096	2756.8	2506	1802.3
Fired-over area	1334.6	912.8	600.8	807.8
Forest suitable land	82181.6	69591.4	53929.9	54713.1
Total[2]	262779.3	257603	256895.9	279130.5

(Note: [1)] National forest inventories provide information on characteristics of forest land by origin, namely natural forest and plantation; [2)] Excluding fruit forest)

4.3 Analysis and Processing of National Data

4.3.1 Calibration

Not necessary

4.3.2 Estimation and forecasting

● **Estimation:**

The same equations as (1-1) and (1-2).

● **Forecasting:**

(a) Area of plantation for forest land in 2005:

$$Area_{p2005} = Area_{p2001} + Area_p \times Rate_{arbor} \times Rate \ - Area_c \qquad (4\text{-}1)$$

Where, $Area_{p2005}$ is the area of plantation in 2005, $Area_{p2001}$ the area of plantation in 2001, $Area_p$ the sum of plantation area from 1998 to 2001, $Rate_{arbor}$ the percentage of arbor afforestation in $Area_p$ (93%), $Rate$ the forested rate (75%), and $Area_c$ the plantation area converting to other land, which coming from the 6th NFI.

(b) Area of plantation and other land types in 1990, 2000 and 2005 as table 1:

Land use/ Characteristics	Area (1000 ha)		
	1990	2000	2005
Natural forest	97867.2	116323.7	121073.2
Plantation	29806.6	46649.6	54615
Open forest land	18347.9	6238.7	5043.3
Shrub land	29388.2	43126.6	53977.7
Unestablished stands	7168.3	4837.9	14225.4

Nursery land	128.8	241.2	389.6
Cut-over area	2824.6	1943	1239.3
Fired-over area	997.2	766.4	704.3
Forest suitable land	72109.5	55339.7	33636.8
Total	258638.4	274683.6	284904.6

4.4 Reclassification

4.4.1 Reclassification matrix

According to NFI and FRA 2005, the plantations in China are further classified as semi-natural, productive plantation and protective plantation. Since 1990s, driven by the key forestry programs, the area of afforestation is regularly increasing. More exotic species are introduced, and the proportion of productive plantation area is also increased.

(a) Reclassification matrix for 2000 or 2005

Land use/Characteristics	**Primary[1]**	**Modified natural**	**Semi-natural[2]**	**Productive plantation[2]**	**Protective plantation[2]**	**Total**
Natural forest	10%	90%				100%
Plantation			56%	40%	4%	100%
Open forest land[3]		70%	17%	12%	1%	100%
Shrub land[3]		70%	30%	0	0	100%
Unestablished stands[5]			56%	40%	4%	100%
Nursery land[5]			56%	40%	4%	100%
Cut-over area[4]		70%	17%	12%	1%	100%
Fired-over area[4]		70%	17%	12%	1%	100%
Forest suitable land[6]		100%				100%

(Notes: 1) The percentage of primary in natural forest is 10 percent, based on expert knowledge. For 2005 area of primary forest is assumed to be the same as the 2000. 2) Plantation is divided into semi-natural, productive plantation and protective plantation. According to NFI and expert knowledge, the percentage of semi-natural, productive plantation and protective plantation for the reference years 2000 or 2005 are 56%, 40% and 4%, respectively. 3) The percentage of natural forest and plantation in open forest land, shrub land, cut-over area and fired-over area are estimated as that in forest land, namely 70% and 30%. 4) Characteristics of unestablished stands and nursery land keep consistency with that of plantation. 5) Forest suitable land is classified as modified natural.)

(b) Reclassification matrix for 1990

Land use/Characteristics	**Primary[1]**	**Modified natural**	**Semi-natural[2]**	**Productive plantation[2]**	**Protective plantation[2]**	**Total**
Natural forest	10%	90%				100%
Plantation			58%	39%	3%	100%
Open forest land[3]		70%	17%	12%	1%	100%
Shrub land[3]		70%	30%	0	0	100%
Unestablished stands[5]			58%	39%	3%	100%
Nursery land[5]			58%	39%	3%	100%

Cut-over area[4]		70%	17%	12%	1%	100%
Fired-over area[4]		70%	17%	12%	1%	100%
Forest suitable land[6]		100%				100%

1) The area of primary forest in 1990 is assumed to be the same of that of 2000. 2) Plantation is divided into semi-natural, productive plantation and protective plantation. According to NFI and expert knowledge, the percentage of semi-natural, productive plantation and protective plantation for the reference year 1990 are 58%, 39% and 3%. 3) The percentage of natural forest and plantation in open forest land, shrub land, cut-over area and fired-over area are 70% and 30%. 4) Characteristics of unestablished stands and nursery land keep consistency with that of plantation, 5) Forest suitable land is classified as modified natural.)

4.5 Data for National Reporting Table T4

Category	**Area (1000 ha)**					
	Forest			**Other wooded land**		
	1990	**2000**	**2005**	**1990**	**2000**	**2005**
Primary	11 632	11632	11 632			
Modified natural	101 754	110956	114 332	92681	84745	71421
Semi-natural	25 289	30 489	39 957	8817	12938	16194
Productive plantation	17 131	21 765	28 530			
Protective plantation	1 335	2 159	2 839			
Total	157 141	177 001	197 290	101498	97683	87615

4.6 Comments to National Reporting Table T4

NFI provides available information on characteristics of forest land by origin, including natural forest and plantation. According to FRA2005, plantation in China is further divided into semi-natural, productive plantation and protective plantation, the percentage of them for the reference years 2000 or 2005 are 56%, 40% and 4%, respectively, and 58%, 39% and 3% in 1990.

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. Explanatory notes: 1. The countries must indicate the three thresholds (X, Y, W in cm) and the parts of the tree that are not included in the volume. The countries must also indicate whether the reported figures refer to volume above ground or above stump. 2. Includes windfallen living trees. 3. Excludes: Smaller branches, twigs, foliage, flowers, seeds, and roots.
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. Explanatory Note: 1. Includes all commercial and potentially commercial (merchantable) species for domestic and international markets. 2. Excludes growing stock on areas where legal, economic or other specific restrictions prevent felling and removal of wood 3. The countries must indicate the minimum diameter (Z cm) applied for considering a tree as being commercial. 4. When most species are commercial, i.e. in the temperate and boreal zone, the "Commercial growing stock" can be close to the "Growing stock". On the other hand, when only a small fraction of all species are merchantable, it can be considerably smaller.

5.2 National Data

5.2.1 Data sources

Reference	Quality (H/M/L)	Variable	Year	Additional comments
National forest resources statistics (1984-1988)	H	Volume	1986	The 3rd NFI
National forest resources statistics (1989-1993)	H	Volume	1991	The 4th NFI
National forest resources statistics (1994-1998)	H	Volume	1996	The 5th NFI
National forest resources statistics (1999-2003)	H	Volume	2001	The 6th NFI

5.2.2 Categories and definitions

Category	Definition
Growing stock	Volume over bark of all living trees more than 5 cm in diameter at breast height. The volume refers to above ground that excludes smaller branches, twigs, foliage, flowers, seeds, and roots.
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 5 cm or more.

5.2.3 Original data

Category	Volume (1000 cubic meters)			
	1986	**1991**	**1996**	**2001**
Timber forest	6173171.3	6743386.9	7206188.4	5512419.4
Protection forest	2449204.2	2827563.1	3374453.4	5859588.8
Firewood forest	65620.4	69167.4	87514.3	56270
Special purpose forest	453080.5	496635.8	598970.3	1028102.6
Open forest land	545852.7	544901.7	136068.7	128163.9
Scattered trees[1]	885569.5	1103584.4	1084668.8	1033555.3
Total	10572498.6	11785239.3	12487863.9	13618100

(Note: [1)] Scattered trees denote trees scattered in shrub land and forest suitable land.)

5.3 Analysis and Processing of National Data

5.3.1 Calibration

Not necessary

5.3.2 Estimation and Forecasting

● Estimation:

The estimating equations are identical to (1-1) and (1-2).

● Forecasting:

(1) Volume of designated functions of forest land:

$$Value_{2005} = D_{2001} \times Area_{2005} \qquad (5\text{-}1)$$

Where, $Value_{2005}$ is the volume of forest by designated functions, D_{2001} the volume density of forest by designated functions based on the 6th NFI, and $Area_{2005}$ the area of forest in 2005.

The growing stock in 2005 is forecasted with volume density and forest area estimated by designated functions as presented in table 3. The volume density for 2005 has been assumed same as it is in 6th NFI.

Category	**Area (1000 ha)**	**Volume density (cubic meter/ha)**	**Volume in "000"cub.m**
Timber forest	83588.6	70	5851202
Protection forest	60275	102	6148050
Firewood forest	3225.9	18	58066.2
Special purpose forestry	6782.9	161	1092046.9
Open forest land	5043.3	21	105909.3
Scattered trees			992664.5
Total		-	14247938.9

(2) Volume of open forest land:

The forecasting equation is same as (5-1)

(3) Volume of scattered trees

Because of a number of growing young trees in fired-over area, it is difficult to calculate average growing stock density per hectare. As a result, linear extrapolation is adopted to forecast the figures about scattered trees volume, according to scattered trees volume of the 5th NFI and the 6th NFI.

(4) Results for estimation and forecasting

Category	Volume (1000 cubic meters)		
	1990	2000	2005
Timber forest	6629343.8	5851173.2	5851202.0
Protection forest	2751891.3	5362561.7	6148050.0
Firewood forest	68458	62518.9	58066.2
Special purpose forestry	487924.7	942276.1	1092046.9
Open forest land	545091.9	129744.9	105909.3
Scattered trees	1059981.4	1043778	992664.5
Total	11542691.2	13392052.8	14247938.9

5.4 Reclassification

Category	FRA2005 Category			
	Growing Stock		Commercial Stock	
	Forest	Other Wooded Land	Forest	Other Wooded Land
Timber forest	**100%**		**100%**	
Protection forest	**100%**		**100%**	
Wood fuel forest	**100%**		**100%**	
Special purpose forest	**100%**			
Open forest land	**100%**		**100%**	
Scattered trees[1]		**100%**		**100%**

(Note: [1)] Volume of scattered trees is estimated as that of other wooded land.)

5.5 Data for National Reporting Table T5

FRA-2005 Categories	Volume as round wood over bark (million cubic meters)					
	Forest			Other Wooded Land		
	1990	2000	2005	1990	2000	2005
Growing Stock	10483	12348	13255	1060	1044	993
Commercial Stock	9995	11406	12163	1060	1044	993

5.6 Comments to National reporting table T5

(1) According to NFI, growing stock is described with volume over bark of stem more than 5cm in diameter at breast height, excluding smaller branches, twigs.

(2) The volume in 2005 is calculated by the product of volume density and designated function area.

Appendix 1 to National Reporting Table T5

Item	Unit	Value	Complementary information
1. Minimum diameter at breast height of trees included in Growing stock (X)	Cm	5	
2. Minimum diameter at the top end of stem (Y) for calculation of Growing stock	Cm	ID	
3. Minimum diameter of branches included in Growing stock (W)	Cm	NO	
4. Minimum diameter at breast height of trees in Commercial growing stock (Z)	Cm	5	
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		

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

References to sources of information	Quality (H/M/L)	Variable(s)	Year	Additional comments
National forest resources statistics (1984-1988)	H	Volume	1986	The 3rd NFI
National forest resources statistics (1989-1993)	H	Volume	1991	The 4th NFI
National forest resources statistics (1994-1998)	H	Volume	1996	The 5th NFI
National forest resources statistics (1999-2003)	H	Volume	2001	The 6th NFI
The change of land utilization and the list for green house gas letting in 1994	H	WD, BEF, etc.	2004	Research Report

6.2.2 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.

6.2.3 Original data

The table uses growing stock figures in Table 5.

6.3 Analysis and Processing of National Data

6.3.1 Calibration

Not necessary

6.3.2 Estimation and Forecasting

In this table, biomass stock includes woody biomass, and biomass of economic forest and bamboo forest. The estimation process of them are different, BEF method is used for woody biomass, and average biomass per hectare for economic forest and bamboo forest due to not existing BEF method from IPCC. The relevant parameters value for woody biomass calculation comes from *GUIDELINES FOR COUNTRY REPROTING TO FRA2005*, however, average biomass per hectare of economic forest and bamboo forest are cited from thematic study -"*The change of land utilization and the list for green house gas letting in 1994*", which are based on expert knowledge. Among them, woody biomass is estimated with growing stock in table 5, consisting of forest biomass and trees biomass scattered in other wooded land, percent of them in woody biomass is assumed to be same as that in volume in table 6, respectively. The figures on volume percent of arbor forest and scattered trees are from NFI.

(a) Calculation of woody biomass (Forest+Owl) of 1986

Species (group)[1]	**Growing stock (1000 m^3)**	**Wood Density[1] (ton/m^3)**	**Stem biomass (1000 ton)**	**Biomass Exp.fact[2]**	**Above ground biomass (1000 ton)**	**Root-Shoot Ratio[1]**	**Blow ground Biomass (1000 ton)**
Oak	1101971.3	0.58	639143	1.4	894800	0.46	411608
Fir	800797	0.4	320319	1.3	416415	0.32	133253
Spruce	904626.8	0.4	361851	1.3	470406	0.32	150530
Larch	940070.1	0.46	432432	1.3	562162	0.32	179892
Birch	600358	0.51	306183	1.4	428656	0.46	197182
Cunninghamia lanceolata (Lamb.) Hook	268515.1	0.4	107406	1.3	139628	0.46	64229
Pinus massoniana Lamb.	407192.6	0.42	171021	1.3	222327	0.46	102270
Pinus yunnanensis Franch	253806	0.42	106599	1.3	138579	0.46	63746
Poplar	246212.6	0.4	98485	1.4	137879	0.46	63424
Pinus densata Mast.	153606.4	0.42	64515	1.3	83870	0.32	26838
Remainder of species[3]	4895342.7		1974029		2640765		897427
Total	10572498.6		4581983		6135487		2290399

(Notes: 1) Dominant species in every species group are listed in country reporting table 10. , 2) Wood Density, Biomass expansion factor and Root-shoot ratio come from FAO (Appendix 5), 3) Biomass calculations for remainder of species are based on weighted average conversion factors.)

(b) Calculation of woody biomass (Forest+OWL) of 1991

Species (group)[1]	Growing stock (1000 m^3)	Wood Density[1] (ton/m^3)	Stem biomass (1000 ton)	Biomass Exp.fact[2]	Above ground biomass (1000 ton)	Root-Shoot Ratio[1]	Blow ground Biomass (1000 ton)
Oak	1208686.4	0.58	701038	1.4	981453	0.46	451468
Fir	1074981.7	0.4	429993	1.3	558991	0.32	178877
Spruce	1126705.2	0.4	450682	1.3	585887	0.32	187484
Larch	871968.1	0.46	401105	1.3	521437	0.32	166860
Birch	672093.7	0.51	342768	1.4	479875	0.46	220743
Cunninghamia lanceolata (Lamb.) Hook	342650.2	0.4	137060	1.3	178178	0.46	81962
Pinus massoniana Lamb.	430206.7	0.42	180687	1.3	234893	0.46	108051
Pinus yunnanensis Franch	240122.6	0.42	100851	1.3	131106	0.46	60309
Poplar	281786	0.4	112714	1.4	157800	0.46	72588
Pinus densata Mast.	69035.1	0.42	28995	1.3	37694	0.32	12062
Remainder of species[3]	5467003.6		2207001		2950868		1030122
Total	11785239.3		5092894		6818182		2570526

(Notes: [1)] Dominant species in every species group are listed in country reporting table 10. [2)] Wood Density, Biomass expansion factor and Root-shoot ratio come from FAO (Appendix 5). [3)] Biomass calculations for remainder of species are based on weighted average conversion factors.)

(c) Calculation of woody biomass (Forest +OWL) of 1996

Species (group)[1]	Growing stock (1000 m^3)	Wood Density[1] (ton/m^3)	Stem biomass (1000 ton)	Biomass Exp.fact[2]	Above ground biomass (1000 ton)	Root-Shoot Ratio[1]	Blow ground Biomass (1000 ton)
Oak	1335785.1	0.58	774755	1.4	1084657	0.46	498942
Fir	1098841.9	0.4	439537	1.3	571398	0.23	131422
Spruce	1279075.5	0.4	511630	1.3	665119	0.32	212838
Larch	940885.8	0.46	432807	1.3	562649	0.32	180048
Birch	775519.9	0.51	395515	1.4	553721	0.46	254712
Cunninghamia lanceolata (Lamb.) Hook	473573.3	0.4	189429	1.3	246258	0.46	113279
Pinus massoniana Lamb.	558703.9	0.42	234656	1.3	305053	0.46	140324
Pinus yunnanensis Franch	279160.8	0.42	117248	1.3	152422	0.46	70114
Poplar	359298.3	0.4	143719	1.4	201207	0.46	92555
Pinus densata Mast.	197788.5	0.42	83071	1.3	107992	0.32	34557
Remainder of species[3]	5189230.8		2095232		2811600		1049555
Total	12487863.8		5417599		7262076		2778346

(Notes: [1)] Dominant species in every species group are listed in country reporting table 10. [2)] Wood Density, Biomass expansion factor and Root-shoot ratio come from FAO (Appendix 5). [3)] Biomass calculations for remainder of species are based on weighted average conversion factors.)

(d) Calculation of woody biomass (Forest+OWL) of 2001

Species (group)[1]	Growing stock (1000 m^3)	Wood Density[1] (ton/m^3)	Stem biomass (1000 ton)	Biomass Exp.fact[2]	Above ground biomass (1000 ton)	Root-Shoot Ratio[1]	Blow ground Biomass (1000 ton)
Oak	1321402.6	0.58	766414	1.4	1072980	0.46	493571
Fir	1194700.6	0.40	477880	1.3	621244	0.23	142886
Spruce	1036152.7	0.40	414461	1.3	538799	0.32	172416
Larch	920551.3	0.46	423454	1.3	550490	0.32	176157
Birch	845703.2	0.51	431309	1.4	603833	0.46	277763
Cunninghamia lanceolata (Lamb.) Hook	734817	0.40	293927	1.3	382105	0.46	175768
Pinus massoniana Lamb.	671675.7	0.42	282104	1.3	366735	0.46	168698
Pinus yunnanensis Franch	518233.5	0.42	217658	1.3	282955	0.32	90546
Poplar	425965.3	0.40	170386	1.4	238540	0.46	109728
Pinus densata Mast.	378175	0.42	158834	1.3	206484	0.32	66075
Remainder of species[3]	5570723.1	0.40	2249018	1.36	3057475	0.37	1126727
Total	13618100	0.43	5885445	1.35	7921640	0.37	3000335

(Notes: [1)] Dominant species in every species group are listed in country reporting table 10. [2)] Wood Density, Biomass expansion factor and Root-shoot ratio come from FAO (Appendix 5). [3)] Biomass calculations for remainder of species are based on weighted average conversion factors.)

(e) Calculation of woody biomass (Forest +OWL) of 2005

Category	Growing stock (2005) (1000 m^3)	Weighted wood density (2001) (ton/m^3)	Stem biomass (1000 ton)	Weighted BEF (2001)	Above ground biomass (1000 ton)	Weighted Root-Shoot Ratio (2001)	Below-Ground biomass (1000 ton)
All species	14247938.9	0.432178	6157647.6	1.345971	8288016.9	0.378752	3139100.9

(f) Summary Data for woody biomass (Forest+OWL) from above tables, excluding economic forest and bamboo forest

Year	Volume (1000 m^3)	Stem Biomass (1000 ton)	Above-Ground Biomass (1000 ton)	Below-Ground Biomass (1000 ton)
1986	10572498.6	4581983	6135487	2290399
1991	11785239.3	5092894	6818182	2570526
1996	12487863.8	5417599	7262076	2778346
2001	13618100	5885445	7921640	3000335
2005	14247938.9	6157648	8288017	3139101

(Notes: Excluding the biomass of economics forest and bamboo forest.)

(g) Woody biomass (Forest +OWL) for three reference years excluding economic forest and bamboo forest

Reference years	Volume (1000 m^3)	Stem Biomass (1000 ton)	Above-ground biomass (1000 ton)	Below-ground biomass (1000 ton)
1990	11542691.2	4990711.8	6681643	2514500.6
2000	13392052.8	5791875.8	7789727.2	2955937.2
2005	14247938.9	6157647.6	8288016.9	3139100.9

(h) Biomass stock in Forest for reference years excluding economic forest and bamboo forest

The above biomass has been apportioned to Forest following the percentage of growing stock in forest and Other wooded lands (OWL) in the total growing stock as reported in Table 5.

	Percentage in Total Growing stock		
	1990	**2000**	**2005**
Forest Volume	90.82	92.21	93.03
OWL Volume	9.18	7.79	6.97
Total	100	100	100

This leads to the following.

Category	Biomass in 000 MT					
	Forest			OWL		
	1990	**2000**	**2005**	**1990**	**2000**	**2005**
Stem Biomass	453240795	534045639	572863798	45830404	45141941	42900776
Above-Ground Biomass	606805772	718259504	771058059	61358452	60713216	57743200
Below-Ground Biomass	228359001	272555114	292039782	23091005	23038606	21870353

(i) Biomass of bamboo forest

Reference years	Area (1000 ha)	Above-ground biomass (1000 ton)	Blow-ground Biomass (1000 ton)	Total Biomass (1000 ton)
1990	3855.8	ID	ID	642650
2000	4868.5	ID	ID	811440
2005	5444.1	ID	ID	907370

(Notes: Calculating method is bamboo forest area average biomass per hectare (ton/ha) based on expert estimate, originated from thematic study-"*The change of land utilization and the list for green house gas letting in 1994*". For P. heterocycla cv. Pubescens forest, average biomass per hectare is 166.67ton/ha, and 119.35 ton/ha for other bamboo forest.)

(j) Biomass of economic forest

Reference years	Area[1] (1000 ha)	Above-ground biomass (1000 ton)	Below-ground Biomass (1000 ton)	Total[2] Biomass (1000 ton)
1990	11408.3	ID	ID	455191.2
2000	15444.2	ID	ID	616223.6
2005	16371.7	ID	ID	653230.8

(Note: 1) Excluding fruit forest. 2) Calculating method is average biomass per hectare (39.9 ton/ha) based on expert estimate, coming from thematic study-"*The change of land utilization and the list for green house gas letting in 1994"*.)

(k) Above Ground Biomass in Forests including Economic and Bamboo Forests

Reference years	Above Ground Biomass (million tonnes)			
	Forest other than Economic and Bamboo	Economic Forest	Bamboo Forest	Total
1990	6068.1	455.2	642.6	7165.9
2000	7182.6	616.2	811.4	8610.2
2005	7710.6	653.2	907.4	9271.2

(l) Below Ground Biomass in Forests Economic and Bamboo Forests

Reference years	Below Ground Biomass (million tonnes)			
	Forest other than Economic and Bamboo	Economic Forest	Bamboo Forest	Total
1990	2283.6	-	-	2283.6
2000	2725.6	-	-	2725.6
2005	2920.4	-	-	2920.4

(m) Biomass in Other Wooded lands

Reference years	Volume (1000 m^3)	Stem Biomass (1000 ton)	Above-ground biomass (1000 ton)	Below-ground biomass (1000 ton)
1990	1059981.4	458304.0	613584.6	230910.1
2000	1043778.0	451419.4	607131.3	230385.7
2005	992664.5	429007.9	577434.4	218704.3

(Note: the percent of scatter trees biomass in other wooded land in woody biomass is assumed to be same as that of scatter trees volume in total growing stock.)

(n) Dead Wood biomass

Following GPG, a dead to live ration of 0.15 for forests and 0.17 for other wooded lands has been assumed, and default factors originated from GPG, 2003 with proportions of tropic forest, evergreen forest and deciduous forest in China are 0.07, 0.58 and 0.35, respectively.

FRA 2005 Categories	Biomass (oven-dry weight) (million tonnes)					
	Forest			Other wooded land		
	1990	2000	2005	1990	2000	2005
Total of living biomass	9449.4	11335.8	12191.6	844.5	837.5	796.1
Dead wood biomass	**1442.4**	**1711.2**	**1836**	**145.8**	**144.6**	**137.5**

6.4 Reclassification

Not needed.

6.5 Data for National Reporting Table T6

FRA 2005 Categories	Biomass (oven-dry weight) (million tonnes)					
	Forest			Other wooded land[4]		
	1990	2000	2005	1990	2000	2005
Above-ground biomass	7166	8610	9271	614	607	577
Below-ground biomass	2284	2726	2920	231	230	219
Total of living biomass	9450	11336	12191	845	837	796
Dead wood biomass[2, 3]	1442	1711	1836	146	145	138
TOTAL	10892	13047	14027	991	982	934

(Notes: [1)] Biomass of economic forest and bamboo forest is calculated as living biomass. [2)] Default factors originated from FAO are used for biomass calculation of dead wood. [3)] The proportions of tropic forest, evergreen forest and deciduous forest in China are 0.07, 0.58 and 0.35, respectively. [4)] The proportion of biomass in forest and other wooded land is same as that of volume in forest and other wooded land.)

6.6 Comments to National Reporting Table T6

(1) Wood density, biomass expansion factor, and root-shoot ratio come from GPG, 2003 (IPCC), the parameters value of remainder of species is calculated as weighted average value.
(2) Biomass estimate approaches of economic forest and bamboo forest are originated from *The change of land utilization and the list for green house gas letting in 1994*, based on expert knowledge.
(3) Dead-live ratios in tropic forest, evergreen forest and deciduous forest are same as that of IPCC.

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, fumic, 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

References	Quality (H/M/L)	Variable(s)	Year(s)	Additional comments
Table 6	H	Biomass	1990, 2000, 2005	

7.2.2 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.

7.2.3 Original Data

This table uses data from Table 6.

7.3 Analysis and Processing of National Data

The default carbon conversion factor is used (GPG, 2003) with data in Table T6

7.4 Reclassification

Not necessary.

7.5 Data for National Reporting Table T7

FRA 2005 Categories	**Carbon (million tones oven-dry weight)**					
	Forest			**Other wooded land**		
	1990	2000	2005	1990	2000	2005
Carbon in above-ground biomass	3583	4305	4636	307	304	289
Carbon in below-ground biomass	1142	1363	1460	116	115	109
Sub-total: Carbon in living biomass	**4725**	**5668**	**6096**	**422**	**419**	**398**
Carbon in dead wood	721	856	918	73	72	69
Carbon in litter	ID	ID	ID	ID	ID	ID
Sub-total: Carbon in dead wood and litter	**721**	**856**	**918**	**73**	**72**	**69**
Soil carbon to a depth of __ cm	ID	ID	ID	ID	ID	ID
TOTAL	**5446**	**6524**	**7014**	**495**	**491**	**467**

(Notes: [1)] The default value for carbon content of biomass is 0.5, [2)] No available figures about soil carbon and litter layers carbon)

7.6 Comments to National Reporting Table T7

(1) The biomass data comes from table 6.
(2) The default value for carbon content of biomass is 0.5.
(3) Not available information about soil carbon and litter layers carbon.

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. Explanatory note: 1. A wildfire is any unplanned and uncontrolled wildland fire which, regardless of ignition source, may require suppression response.
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. Explanatory note: 1. The countries should specify type of disturbance included in this category

8.2 National data

8.2.1 Data Source

References	Quality (H/M/L)	Variable(s)	Year(s)	Additional comments
China Statistical Yearbook	H	Disturbances	1988-2002	statistics

8.2.2 Classification and definitions

There are no national classification.

8.2.3 Original data

Year	Disturbance by fire (ha)	Insects (1000 ha)	Diseases (1000 ha)	Mice[1] (1000 ha)
1988	80462.4	6998.2	1777.6	896.8
1989	48213.9	9074.7	1976.5	795.3
1990	14443.9	8040.7	1779.6	706.4
1991	22229.2	8904.3	2064.6	717.3
1992	55805.3	6375.4	1501.2	656.6
1998	27424	5328.61	966.03	719.28
1999	43694	5936.21	987.13	737.72
2000	88385.7	6692.82	934.52	891.24
2001	46178.4	6683.72	804.95	901.53
2002	47630.6	6312.15	724.36	851.54

Note: [1)] Disturbance by mice is listed due to its preponderance.

8.3 Analysis and Processing of National Data

8.3.1 Calibration

This step is not needed.

8.3.2 Estimation and Forecasting

● Average method

$$Value_{1990} = \sum_{1=1988}^{1992} Value_i / 5 \qquad (8\text{-}1)$$

$$Value_{2000} = \sum_{1=1998}^{2002} Value_i / 5 \qquad (8\text{-}2)$$

Where, $Value_i$ is the annual area affected during 1988 to 1992, or 1998 to 2002.

Year	**Disturbance by fire (1000 ha)**	**Insects (1000 ha)**	**Diseases (1000 ha)**	**Mice[1] (1000 ha)**
1990	44.2	7878.7	1819.9	754.5
2000	50.7	6190.7	883.4	820.3

8.4 Reclassification

Category	**Categories (FRA 2005)**				
	Disturbance By fire	Disturbance By insects	Disturbance By diseases	Other Disturbance	Total
Disturbance by fire	100%				100%
Disturbance by insects		100%			100%
Disturbance by diseases			100%		100%
Disturbance by mice				100%	100%

8.5 Data for National Reporting Table T8

FRA-2005 Categories	**Average annual area affected (1000 hectares) [1]**			
	Forests		Other Wooded Land	
	1990	2000	1990	2000
Disturbance by fire	44.2	50.7		
Disturbance by insects	7878.7	6190.7		
Disturbance by diseases	1819.9	883.4		
Other disturbance	754.5	820.3		

Note: [1)] The disturbance area in forest and other wooded land is calculated as a whole.

8.6 Comments to National Reporting Table T8

The data under the category of "other disturbance" denotes the disturbance by mice.

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
Plant encyclopaedia of China	H	Species	1993	encyclopaedia
IUCN	H	Species	1994	IUCN

9.2.2 Classification and definitions

No national classes or definitions are available.

9.2.3 Original data

The table uses Plant Encyclopaedia of China for native species and for rest it uses IUCN Red list of Threatened species at its website.

9.3 Analysis and Processing of National Data

This step is not necessary.

9.4 Reclassification

This step is not necessary.

9.5 Data for National Reporting Table T9

Categories (IUCN)	Number of Species (2000)
Number of native tree species[1]	2500
Number of critically endangered tree species[2]	34
Number of endangered tree species[2]	45

Number of vulnerable tree species[2]	96

(Notes: [1)] The number of native tree species is the sum of native bamboo and arbor species. [2)] The figures come from IUCN read list in 1994.)

9.6 Comments to National Reporting Table T9

The figures are originated from the website of IUCN read list in 1994.

Critically endangered tree species	Endangered tree species	Vulnerable tree species
1. Abies beshanzuensis	*1. Abies fanjingshanensis*	*1. Abies squamata*
2. Abies yuanbaoshanensis	*2. Alseodaphne rugosa*	*2. Aesculus wangii*
3. Abies ziyuanensis	*3. Amentotaxus yunnanensis*	*3. Aglaia perviridis*
4. Betula halophila	*4. Annamocarya sinensis*	*4. Alseodaphne hainanensis*
5. Bhesa sinica	*5. Bretschneidera sinensis*	*5. Amentotaxus argotaenia*
6. Carpinus putoensis	*6. Burretiodendron tonkinense*	*6. Amoora dasyclada*
7. Craigia kwangsiensis	*7. Cephalotaxus hainanensis*	*7. Apterosperma oblata*
8. Cycas debaoensis	*8. Cinnamomum mairei*	*8. Aquilaria sinensis*
9. Cycas hongheensis	*9. Cololejeunea magnilobula*	*9. Artocarpus hypargyreus*
10. Cycas szechuanenis	*10. Corylus chinensis*	*10. Burretiodendron esquirolii*
11. Diospyros vaccinioides	*11. Craigia yunnanensis*	*11. Burretiodendron hsienmu*
12. Euryodendron excelsum	*12. Dipteronia dyeriana*	*12. Calocedrus macrolepis*
13. Gleditsia vestita	*13. Distichophyllum carinatum*	*13. Camellia chrysantha*
14. Hopea chinensis	*14. Erythrophleum fordii*	*14. Camellia crapnelliana*
15. Hopea hainanensis	*15. Garcinia paucinervis*	*15. Camellia euphlebia*
16. Hopea mollissima	*16. Ginkgo biloba*	*16. Camellia grijsii*
17. Kurzia sinensis	*17. Helicia shweliensis*	*17. Camellia pubipetala*
18. Magnolia omeiensis	*18. Horsfieldia pandurifolia*	*18. Camellia reticulata*
19. Magnolia zenii	*19. Laportea urentissima*	*19. Camellia tunghinensis*
20. Manglietia sinica	*20. Litsea dilleniifolia*	*20. Castanopsis concinna*
21. Metasequoia glyptostroboides	*21. Magnolia delavayi*	*21. Cephalomappa sinensis*
22. Myristica yunnanensis	*22. Magnolia phanerophlebia*	*22. Cephalotaxus lanceolata*
23. Nyssa yunnanensis	*23. Magnolia sargentiana*	*23. Cephalotaxus mannii*
24. Ostrya rehderiana	*24. Magnolia wilsonii*	*24. Cephalotaxus oliveri*
25. Pinus squamata	*25. Manglietia ovoidea*	*25. Chosenia arbutifolia*
26. Pterospermum kingtungense	*26. Michelia aenea*	*26. Chunia bucklandioides*
27. Pterospermum menglunense	*27. Michelia coriacea*	*27. Cleidiocarpon cavaleriei*
28. Pterospermum yunnanense	*28. Michelia ingrata*	*28. Cornus monbeigii*
29. Reevesia rotundifolia	*29. Michelia wilsonii*	*29. Cunninghamia konishii*
30. Sonneratia hainanensis	*30. Michelia xanthantha*	*30. Cupressus chengiana*
31. Thuja sutchuenensis	*31. Nothotsuga longibracteata*	*31. Cupressus gigantea*
32. Ulmus gaussenii	*32. Paranephelium hainanensis*	*32. Dalbergia balansae*
33. Vatica guangxiensis	*33. Parashorea chinensis*	*33. Dalbergia odorifera*
34. Vatica xishuangbannaensis	*34. Pellacalyx yunnanensis*	*34. Dalbergia tonkinensis*
	35. Phoebe nanmu	*35. Diplopanax stachyanthus*
	36. Picea aurantiaca	*36. Dipterocarpus retusus*
	37. Picea farreri	*37. Dysosma versipellis*
	38. Picea neoveitchii	*38. Elaeagnus mollis*
	39. Pinus wangii	*39. Euonymus lanceifolia*
	40. Pseudotaxus chienii	*40. Fagus longipetiolata*
	41. Schistochila macrodonta	*41. Firmiana hainanensis*
	42. Sciaromiopsis sinensis	*42. Gmelina hainanensis*
	43. Torreya jackii	*43. Halesia macgregorii*
	44. Ulmus chenmoui	*44. Heptacodium miconioides*
	45. Vatica mangachapoi	*45. Heritiera parvifolia*
Vulnerable tree species	Vulnerable tree species	Vulnerable tree species
46. Hopea exalata	*63. Manglietia grandis*	*80. Rhoiptelea chiliantha*
47. Hydnocarpus hainanensis	*64. Manglietia megaphylla*	*81. Saccopetalum prolificum*
48. Illicium ternstroemioides	*65. Meiogyne hainanensis*	*82. Salix magnifica*

49. Ixonanthes chinensis	*66. Michelia hypolampra*	*83. Santalum album*
50. Jamesoniella undulifolia	*67. Phoebe chekiangensis*	*84. Scaphophyllum speciosum*
51. Lagerstroemia intermedia	*68. Phoebe zhennan*	*85. Schefflera chapana*
52. Larix mastersiana	*69. Photinia lasiogyna*	*86. Sinojackia dolichocarpa*
53. Madhuca hainanensis	*70. Picea brachytyla*	*87. Sinojackia xylocarpa*
54. Madhuca pasquieri	*71. Picea retroflexa*	*88. Sorbus amabilis*
55. Magnolia amoena	*72. Pinus dabeshanensis*	*89. Taiwania cryptomerioides*
56. Magnolia cylindrica	*73. Pittosporum pauciflorum*	*90. Takakia ceratophylla*
57. Magnolia rostrata	*74. Potameia lotungensis*	*91. Tapiscia sinensis*
58. Magnolia sinensis	*75. Premna szemaoensis*	*92. Taraktogenos annamensis*
59. Malania oleifera	*76. Pseudotsuga sinensis*	*93. Taxus fuana*
60. Malus komarovii	*77. Pterostyrax psilophylla*	*94. Tetrathyrium subcordatum*
61. Malus sieversii	*78. Rhododendron cyanocarpum*	*95. Tsuga forrestii*
62. Manglietia aromatica	*79. Rhododendron jucundum*	*96. Ulmus elongata*

10 Table T10 - Growing Stock Composition

10.1 FRA 2005 Categories and Definitions

Growing Stock Composition	The composition of "growing stock" in "Forest" by ten most common (by volume) tree species in forests.

10.2 National Data

10.2.1 Data sources

References to sources of information	Quality (H/M/L)	Variable(s)	Year(s)	Additional comments
National forest resources statistics (1984-1988)	H	Volume	1986	The 3rd NFI
National forest resources statistics (1989-1993)	H	Volume	1991	The 4th NFI
National forest resources statistics (1994-1998)	H	Volume	1996	The 5th NFI
National forest resources statistics (1999-2003)	H	Volume	2001	The 6th NFI

10.2.2 Original data

Species[1]	1986	1991	1996	2001
Oak	1101971.3	1208686.4	1335785.1	1321402.6
Fir	800797	1074981.7	1098841.9	1194700.6
Spruce	904626.8	1126705.2	1279075.5	1036152.7
Larch	940070.1	871968.1	940885.8	920551.3
Birch	600358	672093.7	775519.9	845703.2
Cunninghamia lanceolata (Lamb.) Hook	268515.1	342650.2	473573.3	734817
Pinus massoniana Lamb.	407192.6	430206.7	558703.9	671675.7
Pinus yunnanensis Franch	253806	240122.6	279160.8	518233.5
Poplar	246212.6	281786	359298.3	425965.3
Pinus densata Mast.	153606.4	69035.1	197788.5	378175
Remainder of Species	4009773.2	4363419.2	4104562.1	4537167.8
Total	9686929.1	10681654.9	11403195.1	12584544.7

(Note: [1)] Species include species and species group, detailed information about species group is presented in section 10.6)

10.3 Analysis and Processing of National Data

10.3.1 Calibration

This step is not necessary

10.3.2 Estimation and Forecasting

● **Estimation**

$$Value_{1990} = Value_{1991} - (Value_{1991} - Value_{1986}) / 5 \quad (10\text{-}1)$$

$$Value_{2000} = Value_{2001} - (Value_{2001} - Value_{1996}) / 5 \quad (10\text{-}2)$$

Where, $Value_{1986}$, $Value_{1991}$, $Value_{1996}$ and $Value_{2001}$ are the species (group)-based volume data.

Species	**Volume** (1000 Cubic Meters)	
	1990	**2000**
Oak	1187343.4	1324279.1
Fir	1020144.8	1175528.9
Spruce	1082289.5	1084737.3
Larch	885588.5	924618.2
Birch	657746.6	831666.5
Cunninghamia lanceolata (Lamb.) Hook	327823.2	682568.3
Pinus massoniana Lamb.	425603.9	649081.3
Pinus yunnanensis Franch	242859.3	470419
Poplar	274671.3	412631.9
Pinus densata Mast.	85949.4	342097.7
Remainder of Species	4292689.8	4450646.6
Total	10482709.7	12348274.8

10.4 Reclassification

This step is not necessary

10.5 Data for National Reporting Table T10

Species	**Volume (million Cubic Meters)**	
	1990	2000
Oak	1187	1324
Fir	1020	1176
Spruce	1082	1085
Larch	886	925
Birch	658	832
Cunninghamia lanceolata (Lamb.) Hook	328	683
Pinus massoniana Lamb.	426	649
Pinus yunnanensis Franch	243	470
Poplar	275	413
Pinus densata Mast.	86	342
Remainder of Species	4293	4451
Total	10483	12348

10.6 Comments to National Reporting Table T10

The list for dominant species in each group in the above table is as under.

Oak, including *Quercus liaotungensis, Quercus monglica, Quercus acutissima, Quercus aliena, Quercus aliena var. acutesenata, Quercus variabilis, Quercus baronii and Quercus stewardii*.

Fir, including *Abies fargesii, Abies delavayi, Abies georgei, Abies koreana, Abies nephrolepis, Abies squamata, Abies nukiangensis and Abies kawakamii*.

Spruce, including *Picea jezoensis var. komarovii, Picea brachytyla, Picea morrisonicala and Picea spinulosa.*

Larch, including *Larix olgensis, Larix principis-rupprechtii, Larix kaempferi and Larix gmelini*.

Birch, including *Betula platyphylla, Betula dahurica, Betula ermanii, Betula pendula cv. Tristis and Betula alnoides Buch--Ham ex D.Don*

Poplar, including *Populus diversifolia, Populus davidiana, Populus laurifolia, Populus ussuriensis, Populus lasiocarpa, Populus simonii and Populus nigra var. italica*.

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).** Explanatory note: 1. The term "removal" differs from "felling" as it excludes felled trees left in the forest. 2. Includes removal from fellings in an earlier period and from trees killed or damaged by natural causes 3. Includes removal by local people or owners for their own use
Woodfuel Removal	**The wood removed for energy production purposes, regardless whether for industrial, commercial or domestic use** Explanatory note: 1. Woodfuel includes wood collected or removed directly from forest for energy purposes only and excludes woodfuel which is produced as a by-product or residual matter from industrial processing of roundwood 2. Includes removal from fellings in an earlier period and from trees killed or damaged by natural causes 3. Includes removal by local people or owners for their own 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
China Forestry Statistical Yearbook	H	Wood removal	1988-2002	Inventory

11.2.2 Classification and Definitions

Category	Definition
Industrial wood removal	The wood removed (volume of roundwood over bark) by wood enterprises for production of goods and services other than energy production, which is yielded by a series of processes, including felling, transporting and reaching storing plots and checking in order to accord with national wood criteria.
Removal by local people	The wood removal by local people for own use.
Woodfuel removal	The wood removed for energy production purposes, regardless whether for industrial, commercial or domestic use.

11.2.3 Original data

Year	Industrial wood removal (1000 m^3)	Wood removal by local people (1000 m^3)	Woodfuel removal (1000 m^3)	Total (1000 m^3)
1988	62176	43001.2	65000.6	170177.8
1989	58018	35809.2	64571.4	158398.6
1990	55710	39892.4	60673.8	156276.2
1991	58073	38593.2	58446.6	155112.8
1992	61736	36366	57338.8	155440.8

1993	63922	38407.6	55297.2	157626.8
1994	66151	44729.6	61932.4	172813
1995	67669	45158.8	59351.4	172179.2
1996	67102.7	45373.4	59566	172042.1
1997	63947.9	44880.4	56126.6	164954.9
1998	59662	44944.2	54404	159010.2
1999	52368	44352.6	51921.6	148642.2
2000	47239.7	44439.6	50228	141907.3
2001	45520.3	44503.4	48528.6	138552.3
2002	44360.7	44567.2	46835	135762.9

11.3 Analysis and Processing of National Data

11.3.1 Calibration

Not necessary

11.3.2 Estimation and Forecasting

● Estimation

$$Value_{1990} = \sum_{1=1988}^{1992} Value_i / 5 \qquad (11\text{-}1)$$

$$Value_{2000} = \sum_{1=1998}^{2002} Value_i / 5 \qquad (11\text{-}2)$$

FRA 2005 category	Removal 1990 (1000 m3)	Removal 2000 (1000 m3)
Industrial wood removal	59142.6	49830.1
Removal by local people	38732.4	44561.4
Woodfuel removal	61206.2	50383.4
Total	159081.2	144774.9

● Forecasting

(1) Industrial wood removal

In order to reflect current wood removal policies in China, industrial wood removal in 2005 is same as that in 2002.

(2) Wood removal by local people (mathematical model)

$$Y(t) = 39982 + 622.4 \times t + (-20.795) \times t^2 \qquad (11\text{-}3)$$

Where, $Y(t)$ denotes the forecasting removal in t year

(3) Woodfuel removal (mathematical model)

$$Y1(t) = -3341141 \times Exp(-0.01913 \times (t-1)) + 3406142 \quad (11\text{-}4)$$

$$Y0(t) = y1(t) - y1(t-1) \quad (11\text{-}5)$$

Where,*Y1(t)* denotes the cumulative removal of woodfuel during t years since 1988,*Y0(t)* denotes woodfuel removal in 1988+t.

Category	Volume (1000 Cubic Meters) (2005)
Industrial wood removal	44360.7
Wood removal by local people	44447.2
Woodfuel removal	46627.5
Total	135435.4

11.4 Reclassification

Categories	Industrial wood removal	Woodfuel removal	Total
Industrial wood removal	100%		100%
Wood removal by local people	100%		100%
Woodfuel removal		100%	100%

11.5 Data for National Reporting Table T11

FRA-2005 Categories	Volume as round wood over bark (1000 cubic meters)					
	Forest1			Other Wooded land		
	1990	2000	2005	1990	2000	2005
Industrial roundwood	97875	94391.5	88807.9			
Woodfuel	61206.2	50383.4	46627.5			
Total	159081.2	144774.9	135435.4			

(Note: Nationwide wood removal estimation by forest and other wooded land is difficult and it is estimated as that in forest.)

11.6 Comments to National Reporting Table T11

(1) Data for Industrial wood removal has originated from China Forestry Statistical Yearbook.
(2) Wood removal by local people and wood fuel removal is based on the support of NFI, specific investigation and a mathematic model.
(3) At national level it is difficult to generate statistics of wood removal by forest and other wooded land. All removal has been estimated as that in forest.

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).** Explanatory notes: 1. The value to be reported refers to the market value at the site of removal. In case that value is obtained from a point further down the production chain, transport costs and possible handling and/or processing costs should be discounted. 2. In case that the wood is removed for subsistence use, the value should be calculated based on local market price. The value should be reported excluding taxes
Value of Woodfuel Removal	**Value of the wood removed for energy production purposes, regardless whether for industrial, commercial or domestic use** Explanatory notes 1. The value to be reported refers to the market value at the site of removal. In case that value is obtained from a point further down the production chain, transport costs and possible handling and/or processing costs should be discounted. 2. In case that the wood is removed for subsistence use, the value should be calculated based on local market value. The value should be reported excluding taxes

12.2 National Data

12.2.1 Data sources

References	Quality (H/M/L)	Variable(s)	Year(s)	Additional comments
China Forestry Statistical Yearbook	H	Wood removal	1988-2002	Statistics
China Forestry Statistical Yearbook	H	Price	2001-2003	Statistics

12.2.2 Classification and Definitions

12.2.3 Original data

(1) The original data on quantity of removal as in Table 11.

(2) The price for wood and woodfuel in 2001 is applied to calculate value of wood removal in 2000.

Category	Price (RMB/cubic meter)		
	2001	**2002**	**2003**
Industrial wood removal	450	485	449
Removal by local people	450	485	449

12.3 Analysis and Processing of National Data

12.3.1 Calibration

Not necessary

12.3.2 Estimation and forecasting

● Estimation:

(1) Value of wood removal

Value of wood removal is the product of wood removal with its price. For industrial wood removal, price in 2000 is USD 58.6 per cubic meter. Due to not existing national information on industrial wood removal price in 1990, expert estimation is adopted here. According to relevant market investigation from experts, price of industrial wood removal in 1990 is USD 50.1 per cubic meter.

(2) Value of removal by local people

The average price of removal by local people for 1990, 2000 and 2005 is same as that of wood removal.

(3) Value of woodfuel removal

Available information on price for woodfuel removal is in short until now, expert estimation is applied for woodfuel removal value. Price of woodfuel removal for reference years, 1990 and 2000 is USD 14.4 and 15.1 per cubic meter, respectively. Due to high increasing trend of price of woodfuel in recent years, it is difficult to forecast price of woodfuel and value of woodfuel removal in 2005.

● Forecasting:

Average price of wood removal from 2001 to 2003 is used to forecast value of wood removal in 2005, namely USD 55.7 per cubic meter.

12.4 Reclassification into FRA 2005 Classes

Category	Industrial wood	Wood fuel	Total
Industrial wood removal	100%		100%
Removal by local people	100%		100%
Woodfuel removal		100%	100%

12.5 Data for National Reporting Table T12

FRA-2005 Categories	Value of Round Wood Removal (1000 USD) [1]					
	Forest			Other wooded land		
	1990	2000	2005	1990	2000	2005
Industrial wood	4902693	5530975	4946290			
Woodfuel[3]	881479	760895	ID			
Total	5784172	6291870				

(Note: [1)] 1USD = 8.277RMB. [2)] Price of industrial wood in 1990 is expert estimation. [3)] Price of woodfuel in 1990 and 2000 come from expert estimation)

12.6 Comments to National Reporting Table T12

(1) The information on price of wood removal price in 1990 comes from expert estimate, and an assumption only.
(2) Price of wood removal in 2000 equals to that of in 2001. Average price of wood removal from 2001 to 2003 is used to forecast removal value of wood in 2005.
(3) The information on price of woodfuel in 1990 and 2000 is also based on expert estimation, and for 2005 is not available due to fast increasing at price of woodfuel since 2001. Value of woodfuel removal in this table should not be regarded as authoritative data to evaluate wood industry of China.

13 Table T13 - Non-Wood Forest Products Removal

13.1 FRA 2005 Categories and Definitions

Category
Plant products / raw material
Food
Fodder
Raw material for medicine and aromatic products
Raw material for colorants and dyes
Raw material for utensils, handicrafts & construction
Ornamental plants
Exudates
Other plant products
Animal products / raw material
Living animals
Hides, skins and trophies
Wild honey and bee-wax
Bush meat
Raw material for medicine
Raw material for colorants
Other edible animal products
Other non-edible animal products

13.2 National Data

13.2.1 Data sources

References	Quality (H/M/L)	Variable(s)	Year(s)	Additional comments
China Statistical Yearbook	H	Products	1988-2002	Statistics

13.2.2 Classification and definitions

This provides information on following plant products because data is insufficient to report on other plant products and any of the animal products.

Category	
Plant products / raw material	
A1.Raw Lacquer	A9.Walnut
A2.Tong oil tree seed	A10.Chestnut
A3.Camellia oil seed	A11.Scraped Lac
A4. Tallow Tree seed	A12 rosin
A5.Chinese gallnut	A13 turpentine
A6.Palm tree bark	A14 camphor
A7. Pine seeds	A15 borneol
A8.Dried Bamboo shoots	A16 tannin extract

13.2.3 Original data

Year	NWFP Removal (Ton)							
	A1	A2	A3	A4	A5	A6	A7	A8
1988	3334	358697	462622	63483	3754	34072	461370	64354
1989	2950	334757	667245	56106	5265	40336	486836	72821
1990	2683	359770	523313	51947	5783	39860	435244	83551
1991	2945	327544	620727	45477	5595	42137	440431	87242
1992	3350	437154	629112	43465	6223	42037	469331	104226
1993	3376	421027	487942	40621	8818	45895	580780	127135
1994	3219	434539	630737	36864	9094	50339	569270	133035
1995	2971	402148	623126	38834	10085	52955	548157	174561
1996	3994	410066	695733	42306	9879	58549	580819	183052
1997	4415	453355	856868	40912	11060	58158	702982	217216
1998	4694	432104	722627	40512	13241	74251	544615	244882
1999	5314	448323	792690	35401	9008	61040	571477	310480
2000	5279	453461	823224	35775	8678	61082	551057	339084
2001	4925	406716	824731	29296	8332	59612	563689	353783
2002	7198	388114	852759	30054	8344	58612	567162	481957

Year	NWFP Removal (Ton)							
	A9	A10	A11	A12	A13	A14	A15	A16
1988	177098	103576	2896	167202	25050	1243	249	28527
1989	160053	102545	2375	426587	58103	8208	450	26481
1990	149560	115191	1421	344003	47009	6683	474	20402
1991	151644	137747	1280	360419	50884	5991	425	19516
1992	163862	139168	1568	439958	54540	5716	523	26305
1993	192159	162403	2455	567142	62554	6021	522	26905
1994	209997	218793	3733	501559	53920	8839	508	23808
1995	230677	247025	3415	529583	80294	12373	7437	19662
1996	239162	340302	3019	534869	69140	10170	1132	23870
1997	248383	378183	2771	728633	89374	9438	159	19824
1998	269203	469828	1816	459135	47542	12822	502	14529
1999	274246	534631	1830	483919	51460	8559	500	10972
2000	309875	598185	1419	432130	47508	12501	1263	9526
2001	252347	599077	1590	439589	56258	5808	578	4863
2002	343305	701864	1650	464223	59235	11211	674	9583

13.3 Analysis and Processing of National Data

13.3.1 Calibration

Not necessary

13.3.2 Estimation and Forecasting

(1) Estimation

$$Value_{1990} = \sum_{1=1988}^{1992} Value_i / 5 \qquad (13\text{-}1)$$

$$Value_{2000} = \sum_{1=1998}^{2002} Value_i / 5 \qquad (13\text{-}2)$$

(2) Forecasting

$$Value_{2005} = Value_{2002} + 3 * (Value_{2002} - Value_{1998}) / 5 \qquad (13\text{-}3)$$

13.4 Reclassification

National Class	Plant products / raw material (FRA 2005) [1]								
	1	2	3	4	5	6	7	8	Total
A1							100%		100%
A2	100%								100%
A3	100%								100%
A4	100%								100%
A5	100%								100%
A6								100%	100%
A7							100%		100%
A8	100%								100%
A9	100%								100%
A10	100%								100%
A11							100%		100%
A12							100%		100%
A13							100%		100%
A14			100%						100%
A15			100%						100%
A16							100%		100%

Notes: [1)] Insufficient data for Animal Products/ Raw material

13.5 Data for National Reporting Table T13

FRA 2005 Categories	Scale factor	Unit	NWFP removal		
			1990	2000	2005
Plant products / raw material					
1. Food	1000	Ton	1364.1	2489.2	3174.8
2. Fodder		Ton	ID	ID	ID
3. Raw material for medicine and aromatic products	1000	Ton	6.0	10.9	11.0
4. Raw material for colorants and dyes		Ton	ID	ID	ID
5. Raw material for utensils, handicrafts & construction		Ton	ID	ID	ID
6. Ornamental plants		Ton	ID	ID	ID
7. Exudates	1000	Ton	882.6	1084.8	1131.1
8. Other plant products	1000	Ton	39.7	62.9	49.2
Animal products / raw material [1]					
9. Living animals		Units	ID	ID	ID
10. Hides, skins and trophies		Units	ID	ID	ID
11. Wild honey and bee-wax		Ton	ID	ID	ID
12. Bush meat		Ton	ID	ID	ID
13. Raw material for medicine		Ton	ID	ID	ID
14. Raw material for colorants		Ton	ID	ID	ID
15. Other edible animal products		Ton	ID	ID	ID
16. Other non-edible animal products		Ton	ID	ID	ID

13.6 Comments to National Reporting Table T13

(1) The data is insufficient to report at national level on other plant products available in China, such as mushroom, wild vegetables, ginseng, ginko, bamboo handicraft, fresh flowers and so on.

(2) Similarly data is insufficient to report at national level on animal products, for example, wild honey and bee-wax, hide, meat and so on.

14 Table T14 - Value of Non-Wood Forest Product

14.1 FRA 2005 Categories and Definitions

Category
Plant products / raw material
Food
Fodder
Raw material for medicine and aromatic products
Raw material for colorants and dyes
Raw material for utensils, handicrafts & construction
Ornamental plants
Exudates
Other plant products
Animal products / raw material
Living animals
Hides, skins and trophies
Wild honey and bee-wax
Bush meat
Raw material for medicine
Raw material for colorants
Other edible animal products
Other non-edible animal products

14.2 National Data

14.2.1 Data sources

(1) Removal of non-wood forest products (NWFP)

Table 13

(2) Price of non-wood forest products (NWFP)
The thematic investigation on value of NWFP at national level isn't carried out now, in order to show the development of non wood forest product industry in China, price of NWFP estimated by experts are used in this table.

14.2.2 Classification and definitions

Category	
Plant products / raw material	
A1.Raw Lacquer	A9.Walnut
A2.Tong oil tree seed	A10.Chestnut
A3.Camellia oil seed	A11.Scraped Lac
A4. Tallow Tree seed	A12 rosin
A5.Chinese gallnut	A13 turpentine
A6.Palm tree bark	A14 camphor
A7. Pine seeds	A15 borneol
A8.Dried Bamboo shoots	A16 tannin extract

14.2.3 Original data

(1) Table 13 for removal of NWFP

(2) Prices of NWFP

Category	**Price (RMB per ton)[1]**	
Plant products / raw material	**1990**	**2000**
A1.Raw Lacquer	21400	49600
A2.Tong oil tree seed	1000	1389
A3.Camellia oil seed	1400	2579
A4. Tallow Tree seed	800	1190
A5.Chinese gallnut	8700	13888
A6.Palm tree bark	1500	1339
A7. Pine seeds	1000	2381
A8.Dried Bamboo shoots	6400	8928
A9.Walnut	3000	4960
A10.Chestnut	3300	5555
A11.Scraped Lac	2650	3075
A12 rosin	5581	5853
A13 turpentine	6433	6746
A14 camphor	38597	40474
A15 borneol	47300	49600
A16 tannin extract	3784	3968

(Note: [1)] The data on prices of NWFP comes from experts estimation, which may not reflect national price level in China due to different market consumption in three reference years.)

14.3 Analysis and Processing of National Data

14.3.1 Calibration

This step is not necessary.

14.3.2 Estimation and Forecasting

According to price of NWFP from expert estimation, value of non-wood products for 1990 and 2000 are calculated with same price, as shown in table 14.2.3. However, value of that in 2005 isn't forecasted for not latest information on price of NWFP.

14.4 Reclassification

This step is not necessary.

14.5 Data for National Reporting Table T14

FRA-2005 Categories	**Value of non-wood forest products** (1000 USD)[1]		
	1990	2000	2005[3]
Plant products / raw material[2]			
1. Food	322362	1279286	ID
2. Fodder	ID	ID	ID
3. Raw material for medicine and aromatic products	28387	53992	ID
4. Raw material for colorants and dyes	ID	ID	ID
5. Raw material for utensils, handicrafts & construction	ID	ID	ID
6. Ornamental plants	ID	ID	ID
7. Exudates	346036	564184	ID
8. Other plant products	7192	10180	ID
Animal products / raw material (if any)[1]			
9. Living animals	ID	ID	ID
10. Hides, skins and trophies	ID	ID	ID
11. Wild honey and bee-wax	ID	ID	ID
12. Bush meat	ID	ID	ID
13. Raw material for medicine	ID	ID	ID
14. Raw material for colorants	ID	ID	ID
15. Other edible animal products	ID	ID	ID
16. Other non-edible animal products	ID	ID	ID

(Note: [1)] 1USD = 8.277RMB. [2)] The information on price of plant products comes from market investigation by experts in some cities. [3)] The value of plant products in 2003 isn't forecasted due to not available information on price of them.)

14.6 Comments to National Reporting Table T14

The thematic investigation on value of NWFP at national level isn't carried out now. In order to show the development of non-wood forest product industry in China, price of NWFP estimated by experts are used in this table, and may not accurately reflect the status of non-wood forest products in Chinese forestry industry. So, Value of non-wood forest products in this table should not be regarded as authoritative data to evaluate the development of non-wood forest industry in China.

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.** Explanatory notes Includes: 1. Employment in direct productive activities such as planting, seeding, silviculture, logging, terrain transport, collection of NWFP, including administrative and supervisory staff in companies that are engaged in such activities 2. Employment in direct supporting activities to production of goods, such as plant production in nurseries, etc. 3. Contractors working in activities as mentioned under (1) above, even if these are legally considered as self-employed 4. Employment in direct supervision of these activities by private and/or public entities. Excludes: 1. Work performed by individuals or communities for which no employment contract has been established, independently whether for household, subsistence or commercial purposes. 2. Employment in forestry research and education 3. Employment in further processing of the goods produced, independently whether industrial or small-scale
Provision Of services	**Employment in activities directly related to services from forests and woodlands** Explanatory notes 1. Includes employment in activities such as forestry-related eco-tourism, plantation and management of protective plantations, guarding of national parks, etc., independently whether carried out by private or public entities. 2. Includes employment in direct supervision of these activities by private and/or public entities.
Unspecified forestry activities	**Employment in unspecified forestry activities.** Explanatory notes 1. Countries may choose to report employment under this category if their data does not permit a separate reporting on the previous categories.

15.2 National Data

15.2.1 Data sources

References	Quality (H/M/L)	Variable(s)	Year(s)	Additional comments
China Statistical Yearbook	H	Disturbances	1988-2002	Statistics

15.2.2 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. Mainly employment in state forestry centre, state forestry nursery land and the forestry station.
Excavating	Employment in direct productive activities such as logging and terrain transport.
Social service	Employment in activities such as forestry-related eco-tourism, plantation and management of protective plantations, guarding of national parks, natural conservation region.
Other activities	Employment in other forestry-related sector activities.

15.2.3 Original data

Year	Employment (person-years)				
	Primary industry	Excavating	Social services	Other	Total
1988	786859	1099066	8342	600831	2495098
1989	800444	1102221	7669	592237	2502571
1990	798773	1071569	8780	610292	2489414
1991	834410	1081834	8664	619984	2544892
1992	841562	1062386	10448	626638	2541034
1993	855032	1072154	14577	633901	2575664
1994	841501	1082383	17056	1140575	3081515
1995	862146	1099969	18141	1009533	2989789
1996	848800	1057268	18984	925699	2850751
1997	863449	1082539	18663	887610	2852261
1998	806367	869197	17411	665655	2358630
1999	798443	827035	33120	553700	2212298
2000	779052	691498	33385	474260	1978195
2001	771315	626404	21633	403980	1823332
2002	752617	573548	24191	360970	1711326

15.3 Analysis and Processing of National Data

15.3.1 Calibration

This step is not necessary

15.3.2 Estimation and Forecasting

15.3.2.1 Estimation

$$Value_{1990} = \sum_{1=1988}^{1992} Value_i / 5 \qquad (15\text{-}1)$$

$$Value_{2000} = \sum_{1=1998}^{2002} Value_i / 5 \qquad (15\text{-}2)$$

Category	Employment (person-years)	
	1990	2000
Primary industry	812410	781559
Excavating	1083415	717536
Social services	8781	25948
Others	609996	491713

15.4 Reclassification

Category	Primary production	Social services	Unspecified forestry activities	Total
Primary industry	100%			100%
Excavating	100%			100%
Social services		100%		100%
Others			100%	100%

15.5 Data for National Reporting Table T15

FRA 2005 category	Employment (1000 person-years)	
	1990	2000
Primary production	1895.8	1499.1
Social services	8.8	25.9
Unspecified forestry activities	610.0	491.7
Total	2514.6	2016.7

15.6 Comments to National Reporting Table T15

(1) Social service in forest sector includes forestry-related eco-tourism, wildlife conservation and guarding of national parks.
(2) Employee in forestry excludes the people who won't be given wage or salary without a contract of hire.