Forestry Department
Food and Agriculture Organization of the United Nations

GLOBAL FOREST RESOURCES ASSESSMENT

COUNTRY REPORTS

THE DEMOCRATIC PEOPLE'S REPUBLIC OF KOREA

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The Forest Resources Assessment Programme

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

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

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

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

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No official report has been received from the National Correspondent of the country. Therefore, this report is the result of a desk study prepared by the FRA 2005 secretariat in Rome, which summarizes existing available information using the established format for FRA 2005 country reports. The main source of information for this report is the UNEP publication "State of the Environment 2003 – DPR Korea" with some assumptions as mentioned in appropriate place.

Contents

1 Table T1 – Extent of Forest and Other wooded land

1.1 FRA 2005 Categories and definitions

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

1.2 National data

1.2.1 Data sources

References to sources of information	Quality (H/M/L)	Variable(s)	Year(s)	Additional comments
UNEP. 2003. State of the Environment – DPR Korea.	H	Extent	1990, 1993, 1996	
CSB. 1997. Central Statistical Bureau. Pyongyang, DPR Korea	M	Extent	1990,1993,1996	Source of UNEP, 2003)

1.2.2 Classification and definitions

National class	Definition
Forest Land	Not provided
Agricultural Land	Not provided
Industrial Land	Not provided
Water land	Not provided
Residential Land	Not provided

1.2.3 Original data

National Category	Extent in "000" ha		
	1990	1993	1996
Forest Land	9020	8211	8183
Agricultural Land	2038	2087	2103
Industrial Land	189	196	199
Residential Land	137	152	157
Water land	710	720	727
Total	**12094**	**11366**	**11369**

(Source: Table 2.1 in UNEP. 2003)

1.3 Analysis and processing of national data

Forested area in 1990 has been calculated by subtracting the areas of un-forested land (383,000 ha) and grass land (17,000 ha) with in the forest land in 1990 as mentioned in Table 3.1 of the State of Environment – DPR Korea 2003 report (UNEP, 2003). This percentage (90.92%) of forested area in forest land in 1990 has been applied to 1996 and 1993 data. This has lead to the following figures of forested forest land in 1990, 1993 and 1996.

Forested Forest Land	**Extent in "000"ha**		
	1990	**1993**	**1996**
Forested Forest land	8201	7465	7440

1.3.1 Calibration

The national figures of land area and inland water differ from the figures of land area (12,054,000 ha) and Inland water bodies (13,000) maintained by UN STAT and FAO STAT. The agriculture, industrial and residential lands have been regrouped into a new category named "Other land". To calibrate or match the figures of total area, total land area, and inland water area as mentioned in State of Environment – DPR Korea 2003 report with that in UNSTAT or FAOSTAT, the difference were adjusted in the area of "Other land". The national category of "water land" has been renamed as "Inland water bodies" to match with nomenclature of UNSTAT. The following table presents the result of this exercise.

National Categories	**Extent in "000" ha**		
	1990	**1993**	**1996**
Forested Forest Land	8201	7465	7440
Other land	3840	4576	4601
Inland Water (FAO Stat)	13	13	13
Total Country Area (FAO STAT)	12054	12054	12054

(Note: Forests includes natural forests and plantations. Source: UNEP. 2003)

1.3.2 Estimation and forecasting

The area figures for 2000 were estimated through interpolation and the figures for 2005 were forecasted by extrapolation method.

National Categories	**Extent in "000" ha**		
	1990	**2000**	**2005**
Forested Forest Land	8201	6821	6187
Other land	3840	5220	5854
Inland Water (FAO Stat)	13	13	13
Total Country Area (FAO STAT)	12054	12054	12054

1.4 Reclassification into FRA 2005 classes

National Categories	FRA Categories (%)			
	Forest	OWL	Other Land	Inland Water
Forested Land	100			
Other land			100	
Inland Water				100

1.5 Data for National reporting table T1

FRA 2005 Categories	Area (1000 hectares)		
	1990	2000	2005
Forest	8201	6821	6187
Other wooded land			
Other land	3840	5220	5854
...of which with tree cover [1)]			
Inland water bodies	13	13	13
TOTAL	12054	12054	12054

1.6 Comments to National reporting table T1

1. Forest land includes area of plantation as indicated in the paper titled "Current Status of Forest and Agricultural Land in North Korea by Mr. Dong Kyun Park, Secretary General. North East Asian Forest Forum, Korea.

2. An independent remote sensing based study in Forest Research Institute, South Korea assesses more forest area (8,445,500 ha) but less growing stock (342.864 million cubic meters) for the period between 1991 to 1994. The definition of the "forest" used by this study is not available. (*Forest Resource Inventory of North Korea using Satellite Remote Sensing Data*. Seung Ho Lee, Song Ha Choung and Jang Ho Song. FRI. J. For. Sci. Vol 58:1-13. 1998).

2 Table T2 – Ownership of Forest and Other wooded land

2.1 FRA 2005 Categories and definitions

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

2.2 National data

2.2.1 Data sources

References to sources of information	Quality (H/M/L)	Variable(s)	Year(s)	Additional comments
Park, 1997. Current Status of Forest and Agricultural Land in North Korea. Northeast Asian Forest Forum. Korea.	L	Ownership	1997	Mentions that all land belongs to the state

2.2.2 Classification and definitions

Detailed information (classification and definitions) on the ownership or tenure is not available.

2.2.3 Original data

It has been assumed that all forest lands are publicly owned since all land in the country belongs to "State" (Park, 1997).

2.3 Analysis and processing of national data

2.3.1 Calibration

No calibration is needed.

2.3.2 Estimation and forecasting

The estimating and forecasting step is not necessary as it assumed that all forested forest lands in Table 1 are publicly owned.

2.4 Reclassification into FRA 2005 classes

The reclassification step is not necessary as all forest lands are assumed to be publicly owned.

2.5 Data for National reporting table T2

It has been assumed that all forest lands are publicly owned since all land in the country belongs to "State" (Park, 1997).

FRA 2005 Categories	Area (1000 hectares)			
	Forest		Other wooded land	
	1990	2000	1990	2000
Private ownership				
Public ownership	8201	6821		
Other ownership				
TOTAL	**8201**	**6821**		

2.6 Comments to National reporting table T2

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

3.1 FRA 2005 Categories and definitions

Types of designation

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

Designation categories

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

3.2 National data

3.2.1 Data sources

References to sources of information	Quality (H/M/L)	Variable(s)	Year(s)	Additional comments
UNEP. 2003. State of the Environment – DPR Korea.	H	Function	1990, 1993, 1996	

3.2.2 Classification and definitions

National class	Definition
Forest For Timber	Definition not provided in the source document
Economic Forests	Definition not provided in the source document
Firewood forests	Definition not provided in the source document
Protected Forests	Definition not provided in the source document

3.2.3 Original data

National Category	Extent in "000" ha (1990)
Forest For Timber	5440
Economic Forests	1436
Firewood forests	196
Protected Forests	1129
Total	**8201**

(Source: UNEP, 2003)

3.3 Analysis and processing of national data

3.3.1 Calibration

Calibration is not needed as area match with Table 1.

3.3.2 Estimation and forecasting

The breakdown of forested area into four classes is available for 1990 only. To develop a similar breakdown for 2000 and 2005, it has been assumed that same (1990) percentage distribution is applicable for 2000 and 2005.

National Category	**Extent in "000"ha**		
	1990	**2000**	**2005**
Forest For Timber	5440	4525	4104
Economic Forests	1436	1194	1083
Firewood forests	196	163	148
Protected Forests	1129	939	852
Total	**8201**	**6821**	**6187**

3.4 Reclassification into FRA 2005 classes

The following assumptions have been made for estimating area under primary function and total function.

A. Primary Function

National Category	**FRA 2005 Category (%) – Primary Function**				
	Production	**Protection**	**Conservation**	**Social Service**	**Multiple Function**
Forest For Timber	100				
Economic Forests	100				
Firewood forests	100				
Protected Forests			100		

B. Total Function

National Category	**FRA 2005 Category (%) – Total Function**				
	Production	**Protection**	**Conservation**	**Social Service**	**Multiple Function**
Forest For Timber	100	100			
Economic Forests	100	100			
Firewood forests	100	100			
Protected Forests		100	100	100	

3.5 Data for National reporting table T3

FRA 2005 Categories / Designated function	Area (1000 hectares)					
	Primary function			Total area with function		
	1990	2000	2005	1990	2000	2005
Forest						
Production	7072	5882	5335	7072	5882	5335
Protection of soil and water				8201	6821	6187
Conservation of biodiversity	1129	939	852	1129	939	852
Social services				1129	939	852
Multiple purpose				not appl.	not appl.	not appl.
No or unknown function				not appl.	not appl.	not appl.
Total - Forest	**8201**	**6821**	**6187**	**not appl.**	**not appl.**	**not appl.**
Other wooded land						
Production						
Protection of soil and water						
Conservation of biodiversity						
Social services						
Multiple purpose				not appl.	not appl.	not appl.
No or unknown function				not appl.	not appl.	not appl.
Total – Other wooded land				**not appl.**	**not appl.**	**not appl.**

3.6 Comments to National reporting table T3

4 Table T4 – Characteristics of Forest and Other wooded land

4.1 FRA 2005 Categories and definitions

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

4.2 National data

4.2.1 Data sources

No information is available on area of forest by its characteristics.

4.2.2 Classification and definitions

No information is available.

4.2.3 Original data

From National Reporting Table T3

National Category	Extent in "000"ha		
	1990	2000	2005
Forest For Timber	5440	4525	4104
Economic Forests	1436	1194	1083
Firewood forests	196	163	148
Protected Forests	1129	939	852
Total	**8201**	**6821**	**6187**

4.3 Analysis and processing of national data

4.3.1 Calibration

Not needed.

4.3.2 Estimation and forecasting

Not needed.

4.4 Reclassification into FRA 2005 classes

All forests under conservation of biodiversity have been assumed to be primary and that under production (timber, economic and firewood) as semi-natural. Figures for plantations are included in area under "forests".

National Category	**FRA 2005 Category (%) – Primary Function**				
	Primary	**Modified**	**Semi-natural**	**Productive Plantations**	**Protective Plantations**
Forests For Timber			100		
Economic Forests			100		
Firewood forests			100		
Protected Forests	100				

4.5 Data for National reporting table T4

FRA 2005 Categories	**Area (1000 hectares)**					
	Forest			**Other wooded land**		
	1990	**2000**	**2005**	**1990**	**2000**	**2005**
Primary	1129	939	852			
Modified natural						
Semi-natural	7072	5882	5335			
Productive plantation						
Protective plantation						
TOTAL	**8201**	**6821**	**6187**			

4.6 Comments to National reporting table T4

All forests under conservation of biodiversity have been assumed to be primary and that under production (timber, economic and firewood) as semi-natural. Figures for plantations are included in area under "forests".

5 Table T5 – Growing stock

5.1 FRA 2005 Categories and definitions

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

5.2 National data

5.2.1 Data sources

References to sources of information	Quality (H/M/L)	Variable(s)	Year(s)	Additional comments
UNEP. 2003. State of the Environment – DPR Korea.	H	Extent and Growing stock	1978, 1990, 1993, 1996	
DPRK, 2002, National Report to the Third Session of the United Nations Forum on Forests. Ministry of Land and Environment Protection, DPRK.	M	Growing Stock	2002	
Lee, Choung and Song. 1998. *Forest Resource Inventory of North Korea using Satellite Remote Sensing Data*. S FRI. J. For. Sci. Vol 58:1-13. 1998).	M	Growing Stock	1991 to 1994	

5.2.2 Classification and definitions

No information is available on national classes and their definitions relating to growing stock.

5.2.3 Original data

The source document does not indicate whether the figures for growing stock per hectare (GS/ha) are over bark or under bark. It is being assumed that the figures are over bark and further that the "GS/ha" figures for 1978 and 1990 in section 3.1.1 of State of Environment-2003 – DPR Korea (UNEP, 2003) report are per hectare of the forest land and not the forested area. The figure GS/ha of forest land in 1996 have been arrived by dividing the figures of the total growing stock and the area over which it is spread (Section 2.2.1. of the above report). Figure for 2002 are from the "National Report to the Third Session of the United Nations Forum on Forests" (DPRK, 2002). The GS/ha of forested area has been calculated using 1996 ratio between forest land and forested area derived in national reporting Table 1.

National Category	Growing Stock (Over bark Cubic meter per hectare)			
	1978	1990	1996	2002
Forest land	53.6	55.9	56.1	NA[1]

Forested Land	58.95	61.48	61.66	63.50

(Source: 1978, 1990 and 1996 figures from UNEP, 2003 and 2002 from DPRK, 2002.
Note 1: DPRK, 2002 provides information on GS/ha of forest land (47.5 cubic meter/ha) but it does not provide figure of the forest land associated with this calculation, further this figure of 47.5 does not match with past figures of GS/ha for 1978, 1990 and 1996.)

5.3 Analysis and processing of national data

5.3.1 Calibration

There is no need to calibrate growing stock figures,

5.3.2 Estimation and forecasting

The linear trend line and its equation were developed using the original data on growing stock per hectare of the forested land. The figures for growing stock per hectare for 2000 and 2005 were calculated using trend line equation. These figures were multiplied with the forested forest land from Table 1 to calculate the growing stock.

National Category	**1990**	**2000**	**2005**
GS/ha (cubic meter/ha)	61.48	62.89	63.78
Forested Area (000 ha)	8201	6821	6187
Growing Stock (million cubic meters)	504.20	428.97	394.61

5.4 Reclassification into FRA 2005 classes

National Category	**FRA 2005 Category (%)**
	Growing Stock
Growing Stock	100

5.5 Data for National reporting table T5

FRA 2005 Categories	**Volume (million cubic meters over bark)**					
	Forest			**Other wooded land**		
	1990	**2000**	**2005**	**1990**	**2000**	**2005**
Growing stock	504.20	428.97	394.61			
Commercial growing stock	n.a.	n.a.	n.a.			

No information is available on country threshold values.

5.6 Comments to National reporting table T5

1. An independent remote sensing based study in Forest Research Institute, South Korea assesses more forested area (8,445,500 ha) but less growing stock (342.864 million cubic meters) for the period between 1991 to 1994. (*Forest Resource Inventory of North Korea using Satellite Remote Sensing Data*. Seung Ho Lee, Song Ha Choung and Jang Ho Song. FRI. J. For. Sci. Vol 58:1-13. 1998).

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(s)	Additional comments
PRK, 2004. Country Report of People Republic of Korea to FRA 2005	H	Wood density, BEF and Root to Shoot Ratio	1990, 2000 2005	
PRC, 2004. Country Report of People Republic of China to FRA 2005	H	Deadwood	1990, 2000 2005	
Lee, Choung and Song. 1998. *Forest Resource Inventory of North Korea using Satellite Remote Sensing Data*. S FRI. J. For. Sci. Vol 58:1-13. 1998).	M	Growing Stock	1991 to 1994	

6.2.2 Classification and definitions

No information is available

6.2.3 Original data

No national data is available on any of the biomass categories. Therefore, it is assumed that the following national factors of density and biomass expansion factors applicable in South Korea are also applicable for North Korea (PRK, 2004). The factors for mixed forests are simple average of the respective factors for the coniferous and hardwood forests.

Forest type	Basic density	BEF	Root-Shoot Ratio
Conifers	0.470	1.290	0.280
Hardwoods	0.800	1.220	0.410
Mixed	0.635	1.255	0.345

A study (Lee, Choung and Song, 1998) provides the following relative share of growing stock among the above three broad three forest types.

National Information	National Forest Types		
	Conifer	Hardwoods	Mixed
Composition of the growing stock (Ratio)	25.2	59.9	14.9

6.3 Analysis and processing of national data

6.3.1 Calibration

This step is not needed

6.3.2 Estimation and forecasting

A. Weighted Wood Density, Biomass Expansion Factor (BEF) and Root: Shoot Ratio

The following estimates of weighted wood density, BEF and root: shoot ratio have been developed using the ratio of the growing stock in three forest types.

Information	Weighted Factors		
	Wood Density	BEF	Root: Shoot Ratio
Weighted factors	0.692	1.243	0.368

B. Biomass

To estimate deadwood biomass, it has been assumed that the ratio of deadwood biomass to above ground biomass is same (0.20) as in country report of China to FRA 2005.

Information	1990	2000	2005
Growing Stock (million cubic meters)	504.20	428.97	394.61
Above Ground Biomass (million tonnes)	433.80	369.08	339.51
Below Ground Biomass (million tonnes)	159.44	135.66	124.79
Dead Wood Biomass (million tonnes)	86.76	73.82	67.90

6.4 Reclassification into FRA 2005 classes

This step is not needed.

6.5 Data for National reporting table T6

FRA 2005 Categories	Biomass (million metric tonnes oven-dry weight)					
	Forest			Other wooded land		
	1990	2000	2005	1990	2000	2005
Above-ground biomass	433.80	369.08	339.51	n.a.	n.a.	n.a.
Below-ground biomass	159.44	135.66	124.79	n.a.	n.a.	n.a.
Dead wood biomass	86.76	73.82	67.90			
TOTAL	680.00	578.56	532.20			

No information is available on "Thresholds" used by the country.

The rise in biomass in 2005 despite declining forested area is due to reported increasing trend in growing stock per hectare.

6.6 Comments to National reporting table T6

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

No information is available for this table. Information from Table 6 has been used.

7.2.2 Classification and definitions

No new information is available

7.2.3 Original data

No information is available on carbon stocks.

7.3 Analysis and processing of national data

7.3.1 Calibration

There is no need for this step.

7.3.2 Estimation and forecasting

The following estimates of carbon stocks have been developed by converting estimates of biomass stock using default factor (0.5) given in the Good Practice Guidance, 2003 of IPCC.

FRA 2005 Categories	Carbon (Million metric tonnes)					
	Forest			Other wooded land		
	1990	2000	2005	1990	2000	2005
Carbon in above-ground biomass	216.90	184.54	169.76			
Carbon in below-ground biomass	79.72	67.83	62.40			
Sub-total: Carbon in living biomass	**296.62**	**252.37**	232.16			
Carbon in dead wood	43.38	36.91	33.95			
Carbon in litter	n.a	n.a	n.a.			
Sub-total: Carbon in dead wood and litter	**43.38**	**36.91**	**33.95**			
Soil carbon to a depth of _____ cm	n.a	n.a	n.a			
TOTAL CARBON	**340.00**	**289.28**	**266.11**			

7.4 Reclassification into FRA 2005 classes

This step is not needed.

7.5 Data for National reporting table T7

FRA 2005 Categories	Carbon (Million metric tonnes)					
	Forest			Other wooded land		
	1990	2000	2005	1990	2000	2005
Carbon in above-ground biomass	216.90	184.54	169.76			
Carbon in below-ground biomass	79.72	67.83	62.40			
Sub-total: Carbon in living biomass	**296.62**	**252.37**	**232.16**			
Carbon in dead wood	43.38	36.91	33.95			
Carbon in litter	n.a	n.a	n.a.			
Sub-total: Carbon in dead wood and litter	**43.38**	**36.91**	**33.95**			
Soil carbon to a depth of _____ cm	n.a	n.a	n.a			
TOTAL CARBON	**340.00**	**289.28**	**266.11**			

7.6 Comments to National reporting table T7

8 Table T8 – Disturbances affecting health and vitality

8.1 FRA 2005 Categories and definitions

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

8.2 National data

8.2.1 Data sources

References to sources of information	Quality (H/M/L)	Variable(s)	Year(s)	Additional comments
UNEP. 2003. State of the Environment – DPR Korea.	H	Damage by fire	1996	

8.2.2 Classification and definitions

National class	Definition
Damage by Forest Fires	Not available in the source document

8.2.3 Original data

No report is not available from the National Correspondent to FRA hence figures from a UNEP publication "State of Environment- 2003 – DPR Korea" have been used.

National Category	Forest Area affected in "000" ha (1996)
Forest Fire	46

8.3 Analysis and processing of national data

8.3.1 Estimation and forecasting

National data is available for 1996 only. It is assumed that it reflects annual level of fire damage and therefore, same figure is used for 1990 and 2000.

National Category	**Area in "000"ha**	
	1990	**2000**
Damage by fire	46	46

8.4 Reclassification into FRA 2005 classes

No need for reclassification.

8.5 Data for National reporting table T8

FRA-2005 Categories	**Average annual area affected (1000 hectares)**			
	Forests		**Other wooded land**	
	1990	**2000**	**1990**	**2000**
Disturbance by fire	46	46		
Disturbance by insects				
Disturbance by diseases				
Other disturbance				

8.6 Comments to National reporting table T8

9 Table T9 – Diversity of tree species

9.1 FRA 2005 Categories and definitions

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

9.2 National data

9.2.1 Data sources

The country report is not available from the National Correspondent to FRA.

References to sources of information	Quality (H/M/L)	Variable(s)	Year(s)	Additional comments
UNEP. 2003. State of the Environment – DPR Korea.	H	Native spp.	1996	
IUCN 2004. *2004 IUCN Red List of Threatened Species.* <www.redlist.org>.	M	Endangered	2004	

9.2.2 Classification and definitions

No Information is available label from National Correspondent to FRA.

9.2.3 Original data

FRA 2005 Categories	Number of species (year 2000)
Native tree species	3943
Critically endangered tree species	0
Endangered tree species	0
Vulnerable tree species	1

9.3 Data for National reporting table T9

FRA 2005 Categories	Number of species (year 2000)
Native tree species	NDA
Critically endangered tree species	0
Endangered tree species	0
Vulnerable tree species (Chosenia arbutifolia)	1

9.4 Comments to National reporting table T9

The 3943 plant species given by the UNEP report refers to higher plant species and it is not possible to distinguish the native tree species.

10 Table T10 – Growing stock composition

10.1 FRA 2005 Categories and definitions

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

10.2 National data

10.2.1 Data sources

References to sources of information	Quality (H/M/L)	Variable(s)	Year(s)	Additional comments
UNEP. 2003. State of the Environment – DPR Korea.	H	Extent and Growing stock	1990, 1993, 1996	
Lee, Choung and Song. 1998. *Forest Resource Inventory of North Korea using Satellite Remote Sensing Data*. S FRI. J. For. Sci. Vol 58:1-13. 1998).	M	Relative composition of Growing Stock	1991 to 1994	

10.2.2 Original data

The following figures from Table 3.2 in "State of Environment- 2003 – DPR Korea" (UNEP, 2003) have been used with some assumption as mentioned in appropriate places. It is being assumed that area wise composition also reflects basal area or growing stock composition with in each type of forest.

Forest Type	Composition by species in each type	Percent by area
A. Coniferous	Pinus	37.8
	Pinus koraiensis	11.9
	Pine (3 needle leaved pine)	1.7
	Larch	33.8
	Other Conifer (like Deodar)	14.8
	Total	**(100)**
B. Latifoliate	Oak	52.4
	Lime	6.4
	White Birch	6.3
	Acacia	3.2
	Other	**31.7**
	Total	**100**
C. Mixed Forest	Various species	100
Total		

A study (Lee, Choung and Song, 1998) provides the following relative share of growing stock among the above three broad forest types.

National Information	National Forest Types		
	Conifer	Hardwoods	Mixed
Composition of the growing stock (Ratio)	25.2	59.9	14.9

10.3 Analysis and processing of national data

10.3.1 Calibration

No calibration is needed.

10.3.2 Estimation and forecasting

Using the composition of species by area within each of the three forest types along with the relative share of growing stock of these three types leads to following composition of the growing stock in 1998. This can information can be assumed for 2000 as well.

Species or group of Species in UNEP, 2003	Percentage composition
Oak	31.39
Pinus	9.53
Larch	8.52
Lime	3.83
White Birch	3.77
Pinus koraiensis	3.00
Acacia	1.92
Pine (3 needle leaved pine)	0.43
Other species in broad leaved	18.99
Various species in mixed forests	14.90
Other species in conifer forests	3.73
TOTAL	**100.00**

10.4 Reclassification into FRA 2005 classes

This step is not needed

10.5 Data for National reporting table T10

Data is not enough to present the table. However, the information indicates that Oaks species followed by pines contribute maximum to the growing stock of trees in DPR Korea.

10.6 Comments to National reporting table T10

The "State of Environment- 2003 – DPR Korea" (UNEP, 2003) along with a study (Lee, Choung and Song, 1998) have been used. It is being assumed that area wise composition also reflects basal area or growing stock composition within each type of forest.

11 Table T11 – Wood removal

11.1 FRA 2005 Categories and definitions

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

11.2 National data

11.2.1 Data sources

The information contained in the FAO yearbook on forest products have been used for this table.

References to sources of information	Quality (H/M/L)	Variable(s)	Year(s)	Additional comments
FAO, 2002. FAO Yearbook Forest Products.	M	Removal	1988 to 2002	These are Estimates

11.2.2 Classification and definitions

No national information on removal is available.

11.2.3 Original data

Following is the annual quantity of wood removal (FAO, 2002) in "000" cubic meters.

RoundWood	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002
Industrial	600	600	600	600	600	600	600	600	1000	1200	1500	1500	1500	1500	1500
Wood fuel	4198	4301	4363	4483	4633	4755	4855	4987	5145	5306	5356	5429	5503	5561	5620
Total	**4798**	**4901**	**4963**	**5083**	**5233**	**5355**	**5455**	**5587**	**6145**	**6506**	**6856**	**6929**	**7003**	**7061**	**7120**

11.3 Analysis and processing of national data

11.3.1 Estimation and forecasting

Following is the five year annual average quantity of wood removal in 1990 and 2000

Round wood Category	Removal in "million" cubic meter under bark	
	1990	2000
Industrial round wood	600	1,500
Wood Fuel	4,396	5,494
TOTAL for Country	4,996	6,994

For 2005, it is assumed that quantity of industrial removal may remain same as in 2002 and the quantity of wood removal may increase as indicated by time series (regression estimate).

Round wood category	**Removal in "000" cubic meter**
Industrial round wood	1,500
Wood Fuel	6,058
TOTAL for Country	7,558

The unit of above figures in FAO STAT is under bark. Therefore, these figures will be multiplied by a factor of 1.15 to reflect the quantity of removal in "over bark cubic meters".

	Removal in "million" cubic meter over bark		
Round wood category	1990	2000	2005
Industrial round wood	690	1725	1725
Wood Fuel	5055	6318	6967
TOTAL for Country	**5745**	**8043**	**8692**

11.4 Reclassification into FRA 2005 classes

This step is not needed.

11.5 Data for National reporting table T11

FRA 2005 Categories	**Volume in 1000 cubic meters of round wood over bark**					
	Forest			**Other wooded land**		
	1990	**2000**	**2005**	**1990**	**2000**	**2005**
Industrial round wood	690	1725	1725			
Wood Fuel	5055	6318	6967			
TOTAL for Country	**5745**	**8043**	**8692**			

11.6 Comments to National reporting table T11

The estimated removal figures from FAO yearbook on forest products have been used to provide information for this table.

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 (wood fuel).
Value of wood fuel removal	Value of the wood removed for energy production purposes, regardless whether for industrial, commercial or domestic use.

12.2 National data

12.2.1 Data sources

The value per cubic meter (under bark) of export and export has been derived from FAO "Yearbook Forest Products".

References to sources of information	Quality (H/M/L)	Variable(s)	Year(s)	Additional comments
FAO, 2002. FAO Yearbook Forest Products.	M	Value	1997 to 2002	These are Estimates

12.2.2 Classification and definitions

No national information on value of wood removal is available.

12.2.3 Original data

The following price per cum of export and import of industrial wood have been derived from FAO "Yearbook Forest Products". This information is available only from 1990 onwards.

	Price in $/cum													
Industrial Wood	**1990**	**1991**	**1992**	**1993**	**1994**	**1995**	**1996**	**1997**	**1998**	**1999**	**2000**	**2001**	**2002**	**2003**
Import Price	90.91								47.77	47.77	47.77			
Export Price	80.53	60.20	66.43	54.78	51.06	63.13	47.22	76.86	59.25	59.25	59.25	54.35	54.35	54.35
Average Import & Export	85.72	60.20	66.43	54.78	51.06	63.13	47.22	76.86	53.51	53.51	53.51	54.35	54.35	54.35
5 year Avg. Imp &Exp	**70.78**										**53.84**			

12.3 Analysis and processing of national data

12.3.1 Estimation and forecasting

The following value of wood removal for 1990 and 2000 has been derived by using the five year average of the average price of exported and imported industrial round wood. The value for 2005 has been forecasted by assuming that average price of export of industrial wood for

2001 to 2003 will also hold well for 2005. Further it has been assumed that the price for wood fuel is one tenth of the average import and export price of industrial round wood.

	Value in "000"$		
Category	**1990**	**2000**	**2005**
Industrial Round wood	47268	80760	81525
Wood fuel	34632	29582	32925
Total	81900	110342	114450

12.4 Reclassification into FRA 2005 classes

This step is not needed.

12.5 Data for National reporting table T12

FRA 2005 Categories	**Value of round wood removal (1000 USD)**					
	Forest			**Other wooded land**		
	1990	**2000**	**2005**	**1990**	**2000**	**2005**
Industrial round wood	47268	80760	81525	n.a.	n.a.	n.a.
Wood fuel	34632	29582	32925	n.a.	n.a.	n.a.
TOTAL for Country	81900	110342	114450	n.a.	n.a.	n.a.

12.6 Comments to National reporting table T12

The value per cubic meter of export and export has been derived from FAO "Yearbook Forest Products".

13 Table T13 – Non-wood forest product removal

13.1 FRA 2005 Categories and definitions

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

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

13.2 National data

13.2.1 Data sources

No information is available for this table.

13.2.2 Classification and definitions

No information is available.

13.2.3 Original data

No information is available

13.3 Analysis and processing of national data

13.3.1 Estimation and forecasting

No information is available

13.4 Reclassification into FRA 2005 classes

No information is available.

13.5 Data for National reporting table T13

No information is available.

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

14.1 FRA 2005 Categories and definitions

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

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

14.2 National data

14.2.1 Data sources

No information is available for this table.

14.2.2 Classification and definitions

No information is available.

14.2.3 Original data

No information is available.

14.3 Analysis and processing of national data

14.3.1 Estimation and forecasting

No information is available.

14.4 Reclassification into FRA 2005 classes

No information is available.

14.5 Data for National reporting table T14

No information is available.

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 round wood, wood fuel and non-wood forest products.
Provision of services	Employment in activities directly related to services from forests and woodlands.
Unspecified forestry activities	Employment in unspecified forestry activities.

15.2 National data

15.2.1 Data sources

The data has been derived form a study prepared by FAO on "Trends And Current Status Of Contribution Of The Forest Sector To National Economies". This report does not have original figures for DPR Korea but uses productivity (Production/ person) in China to develop its estimates of employment.

References to sources of information	Quality (H/M/L)	Variable(s)	Year(s)	Additional comments
FAO, 2003. Trends and Current Status of Contribution of the Forest Sector to National Economies.	M	Employment	1990 and 2000	Figures based on sub-regional average

15.2.2 Classification and definitions

No information is available.

15.2.3 Original data

The following is data is from a study (FAO, 2003) on employment.

Employment	Employment										
	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
Forestry Logging and other services	4022	3954	3687	3821	3757	4543	9157	13289	20088	24293	23024

15.3 Analysis and processing of national data

15.3.1 Estimation and forecasting

The data restricted taking average of last five years. The estimate for 1990 indicates average total full time employment during 1990 to 1992 and estimate for 2000 reflects average total full employment during 1998 to 2000. This leads to the following figures. No detailed breakdown is available to estimate employment separately by good and services.

Categories	Employment (1000 person-years)	
	1990	2000
Employment in Forestry, Logging and other Services	3.388	22.468

15.4 Reclassification into FRA 2005 classes

It has been assumed that employment through production and through services is generated in the ratio of the area of the forests under production and conservation (Table 3).

15.5 Data for National reporting table T15

FRA 2005 Categories	Employment (1000 person-years)	
	1990	2000
Primary production of goods	3.353	19.375
Provision of services	0.535	3.093
Unspecified forestry activities	0	0
TOTAL	3.388	22.468

15.6 Comments to National reporting table T15

No information is available for this table. The above data has been derived form a study prepared by FAO on "Trends And Current Status Of Contribution Of The Forest Sector To National Economies". This study does not have original figures for DPR Korea but uses productivity (Production/ person) in China to develop its estimates of employment.