



Forestry Department

Food and Agriculture Organization of the United Nations

**GLOBAL FOREST RESOURCES
ASSESSMENT 2010**

COUNTRY REPORT

**THE DEMOCRATIC PEOPLE'S
REPUBLIC OF KOREA**

FRA2010/053
Rome, 2010



The Forest Resources Assessment Programme

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

FAO, at the request of its member countries, regularly monitors the world's forests and their management and uses through the Forest Resources Assessment Programme. This country report forms part of the Global Forest Resources Assessment 2010 (FRA 2010).

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

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

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Report preparation and contact persons

No official report has been received from The Democratic People’s Republic of Korea.

This report is the result of a desk study prepared by the FRA secretariat in Rome, which summarizes existing available information using the established format for FRA 2010 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.

1 Table T1 – Extent of Forest and Other wooded land

1.1 FRA 2010 Categories and definitions

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

1.2 National data

1.2.1 Data sources

References to sources of information	Quality (H/M/L)	Variable(s)	Year(s)	Additional comments
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)
FAO STAT	H	Inland water	1990, 2000, 2005	

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

Land Use Status

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)

Forest land composition and stocks

National Category	Extent in “000” ha
	1990
Forested Land	8201
of which of Forest of timber industry	5440
of which of Economic forest	1436
of which of Firewood forest	196
of which of Protected forest	1129
Non-timber forest land	436
Unforested area	383
Total	9020

(Source: Table 3.1 in UNEP. 2003)

1.3 Analysis and processing of national data

1.3.1 Calibration

Forested Land in 1990 mentioned in Table 3.1 of the State of Environment – DPR Korea 2003 report (UNEP, 2003) is assumed as Forest area of FRA 2010. The percentage (90.92%) of forested land in forest land in 1990 has been applied to 1996 and 1993 data. This has led 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

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, 2005 and 2010 were estimated through extrapolation of the figures from 1990 and 1996.

National Categories	Extent in “000” ha			
	1990	2000	2005	2010
Forested Forest Land	8201	6933	6299	5666
Other land	3840	5108	5742	6375
Inland Water (FAO STAT)	13	13	13	13
Total Country Area (FAO STAT)	12054	12054	12054	12054

1.3.3 Reclassification into FRA 2010 categories

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

1.4 Data for Table T1

FRA 2010 categories	Area (1000 hectares)			
	1990	2000	2005	2010
Forest	8201	6933	6299	5666
Other wooded land	0	0	0	0
Other land	3840	5108	5742	6375
...of which with tree cover	n.a.	n.a.	n.a.	n.a.
Inland water bodies	13	13	13	13
Total for country	12054	12054	12054	12054

1.5 Comments to Table T1

Variable / category	Comments related to data, definitions, etc.	Comments on the reported trend
Forest	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.	
Other wooded land	No data are available on the occurrence of Other wooded land. If areas of Other wooded land exist, they are included within the figure for Other land.	
Other land		
Other land with tree cover		
Inland water bodies		

Other general comments to the table
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. (<i>Forest Resource Inventory of North Korea using Satellite Remote Sensing Data</i> . Seung Ho Lee, Song Ha Choung and Jang Ho Song. FRI. J. For. Sci. Vol 58:1-13. 1998).

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

2 Table T2 – Forest ownership and management rights

2.1 FRA 2010 Categories and definitions

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

2.2 National data

2.2.1 Data sources

References to sources of information	Quality (H/M/L)	Variable(s)	Year(s)	Additional comments
FRA 2005, Country Report of Democratic People’s Republic of Korea		Ownership		

2.2.2 Original data

It is assumed that all forest lands are publicly owned since all land in the country belongs to State.

2.3 Data for Table T2

Table 2a - Forest ownership

FRA 2010 Categories	Forest area (1000 hectares)		
	1990	2000	2005
Public ownership	8201	6933	6299
Private ownership	0	0	0
...of which owned by individuals	0	0	0
...of which owned by private business entities and institutions	0	0	0
...of which owned by local communities	0	0	0
...of which owned by indigenous / tribal communities	0	0	0
Other types of ownership	0	0	0
TOTAL	8201	6933	6299

Note: If other types of ownership is reported, please specify details in comment to the table.

Does ownership of trees coincide with ownership of the land on which they are situated?	<input type="checkbox"/>	Yes
	<input type="checkbox"/>	No
If No above, please describe below how the two differ:		

Table 2b - Holder of management rights of public forests

FRA 2010 Categories	Forest area (1000 hectares)		
	1990	2000	2005
Public Administration	n.a.	n.a.	n.a.
Individuals	n.a.	n.a.	n.a.
Private corporations and institutions	n.a.	n.a.	n.a.
Communities	n.a.	n.a.	n.a.
Other	n.a.	n.a.	n.a.
TOTAL	8201	6933	6299

2.4 Comments to Table T2

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

Other general comments to the table

3 Table T3 – Forest designation and management

3.1 FRA 2010 Categories and definitions

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

3.2 National data

3.2.1 Data sources

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

3.2.2 Classification and definitions

Definitions 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, 2005 and 2010, it has been assumed that same (1990) percentage distribution is applicable for those years.

National Category	Extent in “000”ha			
	1990	2000	2005	2010
Forest For Timber	5440	4599	4178	3759
Economic Forests	1436	1214	1103	992
Firewood forests	196	166	151	135
Protected Forests	1129	954	867	780
Total	8201	6933	6299	5666

3.3.3 Reclassification into FRA 2010 categories

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

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

3.4 Data for Table T3

Table 3a – Primary designated function

FRA 2010 Categories	Forest area (1000 hectares)			
	1990	2000	2005	2010
Production	7072	5979	5432	4886
Protection of soil and water	0	0	0	0
Conservation of biodiversity	1129	954	867	780
Social services	0	0	0	0
Multiple use	0	0	0	0
Other (please specify in comments below the table)	0	0	0	0
No / unknown	0	0	0	0
TOTAL	8201	6933	6299	5666

Table 3b – Special designation and management categories

FRA 2010 Categories	Forest area (1000 hectares)			
	1990	2000	2005	2010
Area of permanent forest estate	n.a.	n.a.	n.a.	n.a.
Forest area within protected areas	1129	954	867	780
Forest area under sustainable forest management	n.a.	n.a.	n.a.	n.a.
Forest area with management plan	n.a.	n.a.	n.a.	n.a.

3.5 Comments to Table T3

Variable / category	Comments related to data, definitions, etc.	Comments on the reported trend
Production		
Protection of soil and water		
Conservation of biodiversity		
Social services		
Multiple use		

Other		
No / unknown designation		
Area of permanent forest estate		
Forest area within protected areas	Protected forest is assumed as forest area within protected area.	
Forest area under sustainable forest management		
Forest area with management plan		

Other general comments to the table

4 Table T4 – Forest characteristics

4.1 FRA 2010 Categories and definitions

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

4.2 National data

4.2.1 Data sources

References to sources of information	Quality (H/M/L)	Variable(s)	Year(s)	Additional comments
UNEP. 2003. State of the Environment – DPR Korea.	H	Afforested / Reforested Area	1990	

4.2.2 Classification and definitions

No information is available on national classes and their definitions relating to forest characteristics.

4.2.3 Original data

Over the same 12-year period (1978 – 1990), the afforested/reforested area expanded from 970,000 hectares to 1.13 million hectares, a rise of 160,000 hectares. (State of Environment 2003, P24)

4.3 Analysis and processing of national data

4.3.1 Calibration

This step is not necessary.

4.3.2 Estimation and forecasting

Protected forest estimated in 3.3.2. is assumed as Primary forest.

The expanded afforested and reforested areas in 1990 in 4.2.3 are assumed as Planted Forest. And planted forest in 2000, 2005 and 2010 is estimated by multiplying the area of afforested and reforested forest in 1990 and the decreasing ratio of forest area in each year.

All other remaining areas are assumed as other naturally regenerated forest.

4.3.3 Reclassification into FRA 2010 categories

This step is not necessary.

4.4 Data for Table T4

Table 4a

FRA 2010 Categories	Forest area (1000 hectares)			
	1990	2000	2005	2010
Primary forest	1129	954	867	780
Other naturally regenerated forest	5942	5024	4564	4104
...of which of introduced species	n.a.	n.a.	n.a.	n.a.
Planted forest	1130	955	868	781
...of which of introduced species	n.a.	n.a.	n.a.	n.a.
TOTAL	8201	6933	6299	5666

Table 4b

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

4.5 Comments to Table T4

Variable / category	Comments related to data, definitions, etc.	Comments on the reported trend
Primary forest		
Other naturally regenerating forest		
Planted forest		
Rubber plantations		
Mangroves		
Bamboo		

Other general comments to the table

5 Table T5 – Forest establishment and reforestation

Data are not available for this table.

6 Table T6 – Growing stock

6.1 FRA 2010 Categories and definitions

Category	Definition
Growing stock	Volume over bark of all living trees more than X cm in diameter at breast height (or above buttress if these are higher). Includes the stem from ground level or stump height up to a top diameter of Y cm, and may also include branches to a minimum diameter of W cm.
Growing stock of commercial species	Growing stock (see def. above) of commercial species.

6.2 National data

6.2.1 Data sources

References to sources of information	Quality (H/M/L)	Variable(s)	Year(s)	Additional comments
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. <i>Forest Resource Inventory of North Korea using Satellite Remote Sensing Data</i> . S FRI. J. For. Sci. Vol 58:1-13. (1998).	M	Relative composition of Growing Stock	1991 to 1994	

6.2.2 Classification and definitions

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

6.2.3 Original data

A. Growing Stock.

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 calculated 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 1990 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	NA	61.48	NA	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.)

B. Growing Stock Composition.

The following figures have been used with some assumption as mentioned below. 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		

(State of Environment- 2003 – DPR Korea” (UNEP, 2003), Table 3.2)

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

6.3 Analysis and processing of national data

6.3.1 Calibration

There is no need to calibrate growing stock figures,

6.3.2 Estimation and forecasting

A. Growing Stock

The linear trend line and its equation were developed using the original data on growing stock per hectare of the forested land. The figure for growing stock per hectare for 2000 was calculated using trend line equation between 1990 and 2002, the figures for 2005 and 2010 were assumed as same as figure in 2002.

These figures were multiplied with the forested forest land from Table 1 to calculate the growing stock.

National Category	1990	2000	2005	2010
GS/ha (cubic meter/ha)	61.48	62.89	63.50	63.50
Forested Area (000 ha)	8201	6933	6299	5666
Growing Stock (million cubic meters)	504.20	436.02	399.99	359.79

B. Growing Stock Composition

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.

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

The information on growing stock composition is not enough to present estimates for table T6b. However, the information indicates that oak species followed by pines contribute most to the growing stock of trees in DPR Korea.

6.4 Data for Table T6

Table 6a – Growing stock

FRA 2010 category	Volume (million cubic meters over bark)							
	Forest				Other wooded land			
	1990	2000	2005	2010	1990	2000	2005	2010
Total growing stock	504	436	400	360				
... of which coniferous	n.a.	n.a.	n.a.	n.a.				
... of which broadleaved	n.a.	n.a.	n.a.	n.a.				
Growing stock of commercial species	n.a.	n.a.	n.a.	n.a.				

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

FRA 2010 category / Species name			Growing stock in forest (million cubic meters)		
Rank	Scientific name	Common name	1990	2000	2005
1 st					
2 nd					
3 rd					
4 th					
5 th					
6 th					
7 th					
8 th					
9 th					
10 th					
Remaining					
TOTAL					

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

Table 6c – Specification of threshold values

Item	Value	Complementary information
Minimum diameter (cm) at breast height ¹ of trees included in growing stock (X)		
Minimum diameter (cm) at the top end of stem for calculation of growing stock (Y)		
Minimum diameter (cm) of branches included in growing stock (W)		
Volume refers to “above ground” (AG) or “above stump” (AS)		

6.5 Comments to Table T6

Variable / category	Comments related to data, definitions, etc.	Comments on reported trend
Total growing stock		
Growing stock of broadleaved / coniferous		
Growing stock of commercial species		
Growing stock composition	Data is not enough to present the table 6b. However, the information indicates that Oaks species followed by pines contribute maximum to the growing stock of trees in DPR Korea.	

Other general comments to the table

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).

¹ Diameter at breast height (DBH) refers to diameter over bark measured at a height of 1.30 m above ground level or 30 cm above buttresses if these are higher than 1 m.

7 Table T7 – Biomass stock

7.1 FRA 2010 Categories and definitions

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

7.2 National data

7.2.1 Data sources

References to sources of information	Quality (H/M/L)	Variable(s)	Year(s)	Additional comments
Country Report of People Republic of Korea to FRA 2010 (PRK 2009)	H	Wood density, BEF and Root to Shoot Ratio	1990, 2000 2005	
Lee, Choung and Song. 1998. <i>Forest Resource Inventory of North Korea using Satellite Remote Sensing Data</i> . S FRI. J. For. Sci. Vol 58:1-13. 1998).	M	Growing Stock	1991 to 1994	

7.2.2 Classification and definitions

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

7.2.3 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, 2009). 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	0.480	1.290	0.280
Hardwoods	0.650	1.220	0.410
Mixed	0.565	1.255	0.345

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

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

7.3 Analysis and processing of national data

7.3.1 Calibration

This step is not necessary.

7.3.2 Estimation and forecasting

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	0.594	1.243	0.368

Application of the weighted factors gives:

Information	1990	2000	2005	2010
Growing Stock (million cubic meters)	504.20	436.02	399.99	359.79
Above Ground Biomass (million tonnes)	372.27	321.93	295.33	265.65
Below Ground Biomass (million tonnes)	137.00	118.47	108.68	97.76

7.4 Data for Table T7

FRA 2010 category	Biomass (million metric tonnes oven-dry weight)							
	Forest				Other wooded land			
	1990	2000	2005	2010	1990	2000	2005	2010
Above-ground biomass	372	322	295	266	0	0	0	0
Below-ground biomass	137	118	109	98	0	0	0	0
Dead wood	n.a.	n.a.	n.a.	n.a.	0	0	0	0
TOTAL	509	440	404	364	0	0	0	0

7.5 Comments to Table T7

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

Other general comments to the table

8 Table T8 – Carbon stock

8.1 FRA 2010 Categories and definitions

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

8.2 National data

8.2.1 Data sources

References to sources of information	Quality (H/M/L)	Variable(s)	Year(s)	Additional comments
FAO. 2008. Guidelines for Country Reporting to FRA 2005. Global Forest Resources Assessment 2010		Carbon conversion factor		

8.2.2 Classification and definitions

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

8.3 Analysis and processing of national data

The carbon conversion factor of 0.47 is multiplied to the biomass in the table 7 to estimate carbon stock.

8.4 Data for Table T8

FRA 2010 Category	Carbon (Million metric tonnes)							
	Forest				Other wooded land			
	1990	2000	2005	2010	1990	2000	2005	2010
Carbon in above-ground biomass	175	151	139	125	0	0	0	0
Carbon in below-ground biomass	64	56	51	46	0	0	0	0
Sub-total: Living biomass	239	207	190	171	0	0	0	0
Carbon in dead wood	n.a.	n.a.	n.a.	n.a.	0	0	0	0
Carbon in litter	n.a.	n.a.	n.a.	n.a.	0	0	0	0
Sub-total: Dead wood and litter	n.a.	n.a.	n.a.	n.a.	0	0	0	0
Soil carbon	n.a.	n.a.	n.a.	n.a.	0	0	0	0
TOTAL	239	207	190	171	0	0	0	0

Soil depth (cm) used for soil carbon estimates	
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8.5 Comments to Table T8

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

Other general comments to the table

9 Table T9 – Forest fires

9.1 FRA 2010 Categories and definitions

Category	Definition
Number of fires	Average number of vegetation fires per year in the country.
Area affected by fire	Average area affected by vegetation fires per year in the country.
Vegetation fire (supplementary term)	Any vegetation fire regardless of ignition source, damage or benefit.
Wildfire	Any <u>unplanned and uncontrolled</u> vegetation fire that, regardless of ignition source, may require suppression response, or other action according to agency policy.
Planned fire	A <u>management-ignited</u> vegetation fire that burns within prescription, i.e. the fire is confined to a predetermined area and produces the fire behaviour and fire characteristics required to attain planned fire treatment and/or resource management objectives.

9.2 National data

9.2.1 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	

9.2.2 Classification and definitions

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

9.2.3 Original data

Category	Forest Area affected in “000” ha (1996)
Forest Fire	46

(UNEP, State of Environment- 2003 – DPR Korea)

9.3 Analysis and processing of national data

9.3.1 Calibration

This step is not necessary.

9.3.2 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, 2000 and 2005.

9.4 Data for Table T9

Table 9a

FRA 2010 category	Annual average for 5-year period					
	1990		2000		2005	
	1000 hectares	number of fires	1000 hectares	number of fires	1000 hectares	number of fires
Total land area affected by fire	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
... of which on forest	46	n.a.	46	n.a.	46	n.a.
... of which on other wooded land	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
... of which on other land	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.

Table 9b

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

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

9.5 Comments to Table T9

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

Other general comments to the table

10 Table T10 – Other disturbances affecting forest health and vitality

The data is not available for this table.

11 Table T11 – Wood removals and value of removals

11.1 FRA 2010 Categories and definitions

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

11.2 National data

11.2.1 Data sources

References to sources of information	Quality (H/M/L)	Variable(s)	Year(s)	Additional comments
FAOSTAT		Industrial roundwood production, woodfuel production	1988-2006	Dated 29 January 2008
Guidelines for Country Reporting to FRA 2010		Bark factor		1.15

11.2.2 Classification and definitions

No information is available on national classes and their definitions relating to wood removal.

11.2.3 Original data

Production of Industrial Roundwood (1000 m3 under bark)

Year	1988	1989	1990	1991	1992	1998	1999	2000	2001	2002	2003	2004	2005	2006
Volume	600	600	600	600	600	1500	1500	1500	1500	1500	1500	1500	1500	1500

Production of Woodfuel (1000 m3 under bark)

Year	1988	1989	1990	1991	1992	1998	1999	2000	2001	2002
Volume	4197.8	4301.5	4362.9	4482.9	4632.9	5356.4	5429.3	5502.9	5561.0	5619.5

Year	2003	2004	2005	2006
Volume	5678.4	5737.5	5797.0	5835.0

11.3 Analysis and processing of national data

FRA 2010 requests the information on the removals as volume over bark while the original data is volume under bark. To convert the volume under bark to volume over bark, a global default conversion factor of 1.15 is multiplied to the original data. It is assumed that the all Industrial roundwood and woodfuel are from forest.

11.4 Data for Table T11

FRA 2010 Category	Industrial roundwood removals			Woodfuel removals		
	1990	2000	2005	1990	2000	2005
Total volume (1000 m ³ o.b.)	690	1725	1725	5055	6318	6626
... of which from forest	690	1725	1725	5055	6318	6626
Unit value (local currency / m ³ o.b.)	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Total value (1000 local currency)	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.

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

	1990	2000	2005
Name of local currency	North Korea Won	North Korea Won	North Korea Won

11.5 Comments to Table T11

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

Other general comments to the table

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

No data is available for this table.

13 Table T13 – Employment

13.1 FRA 2010 Categories and definitions

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

13.2 National data

13.2.1 Data sources

References to sources of information	Quality (H/M/L)	Variable(s)	Year(s)	Additional comments
FAO, 2008. Trends and Current Status of Contribution of the Forest Sector to National Economies.	M	Employment	1990, 2000,2005	http://www.fao.org/docrep/011/k4588e/k4588e00.htm

13.2.2 Classification and definitions

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

13.2.3 Original data

The following are data is from a study (FAO, 2008) on employment. These data have been derived from 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.

Employment	Employment												
	1990	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
Forestry employment	13	12	18	22	24	25	23	23	22	20	20	19	19

13.3 Data for Table T13

FRA 2010 Category	Employment (1000 years FTE)		
	1990	2000	2005
Employment in primary production of goods	n.a.	n.a.	n.a.
...of which paid employment	13	23	19
...of which self-employment	n.a.	n.a.	n.a.
Employment in management of protected areas	n.a.	n.a.	n.a.

13.4 Comments to Table T13

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

Other general comments to the table

No national data are 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.

14 Table T14 – Policy and legal framework

15 Table T15 – Institutional framework

16 Table T16 – Education and research

17 Table T17 – Public revenue collection and expenditure

No data are available for these tables.