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The Forest Resources Assessment Programme

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

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

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

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

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

E-mail: Mette.LoycheWilkie@fao.org

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

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

Report preparation and contact person

This report has been prepared by:

Mr. Kairat Meirembekov (officially nominated National Correspondent to FRA)
Ministry of Agriculture
of the Republic of Kazakhstan
Senior Specialist, 473 000 Astana,
Abaja pr., 49 (49 Abay Ave.), Office 358
Tel: + 007 3172 93 57 04
Fax: + 007 3172 32 82 33
E-mail: forest@minagri.kz

Mr. Ermek Kelemseit
Chairman, Forestry and Hunting Committee

Mr. Kairat Zh. Ustemirov
Head of Division of the Management and
Control over Forestry and Protected Areas
Forestry and Hunting Committee

Abbreviations

FRA-2000	-	Global Forest Resources Assessment 2000
FRA-2005	-	Global Forest Resources Assessment 2005
FAO	-	Food and Agriculture Organization of the United Nations
SFF	-	State Forest Fund
OWL	-	Other wooded land
OLTC	-	Other land with tree cover
H	-	High quality (<i>of data/ information</i>)
M	-	Medium quality
L	-	Low quality
ID	-	Insufficient Data
N/A	-	Not applicable
NDA	-	No Data Available

Contents

1	TABLE T1 – EXTENT OF FOREST AND OTHER WOODED LAND	7
1.1	FRA 2005 CATEGORIES AND DEFINITIONS.....	7
1.2	NATIONAL DATA.....	7
1.3	RECLASSIFICATION INTO FRA 2005 CLASSES	8
1.4	ANALYSIS AND PROCESSING OF NATIONAL DATA.....	8
1.5	DATA FOR NATIONAL REPORTING TABLE T1	9
1.6	COMMENTS TO NATIONAL REPORTING TABLE T1	9
2	TABLE T2 – OWNERSHIP OF FOREST AND OTHER WOODED LAND.....	10
2.1	FRA 2005 CATEGORIES AND DEFINITIONS.....	10
2.2	NATIONAL DATA.....	10
2.3	ANALYSIS AND PROCESSING OF NATIONAL DATA.....	10
2.4	DATA FOR NATIONAL REPORTING TABLE T2	10
3	TABLE T3 – DESIGNATED FUNCTION OF FOREST AND OTHER WOODED LAND	11
3.1	FRA 2005 CATEGORIES AND DEFINITIONS.....	11
3.2	NATIONAL DATA.....	11
3.3	RECLASSIFICATION INTO FRA 2005 CLASSES	11
3.4	DATA FOR NATIONAL REPORTING TABLE T3	12
4	TABLE T4 – CHARACTERISTICS OF FOREST AND OTHER WOODED LAND	13
4.1	FRA 2005 CATEGORIES AND DEFINITIONS.....	13
4.2	NATIONAL DATA.....	13
4.3	RECLASSIFICATION INTO FRA 2005 CLASSES	13
4.4	DATA FOR NATIONAL REPORTING TABLE T4	13
5	TABLE T5 – GROWING STOCK	14
5.1	FRA 2005 CATEGORIES AND DEFINITIONS.....	14
5.2	DATA FOR NATIONAL REPORTING TABLE T5	14
6	TABLE T6 – BIOMASS STOCK.....	15
6.1	FRA 2005 CATEGORIES AND DEFINITIONS.....	15
6.2	NATIONAL DATA.....	15
6.3	ANALYSIS AND PROCESSING OF NATIONAL DATA.....	15
6.4	DATA FOR NATIONAL REPORTING TABLE T6	16
7	TABLE T7 – CARBON STOCK.....	17
7.1	FRA 2005 CATEGORIES AND DEFINITIONS.....	17
7.2	NATIONAL DATA.....	17
7.3	ANALYSIS AND PROCESSING OF NATIONAL DATA.....	17
7.4	DATA FOR NATIONAL REPORTING TABLE T7	18
8	TABLE T8 – DISTURBANCES AFFECTING HEALTH AND VITALITY	19
8.1	FRA 2005 CATEGORIES AND DEFINITIONS.....	19
8.2	DATA FOR NATIONAL REPORTING TABLE T8	19
9	TABLE T9 – DIVERSITY OF TREE SPECIES.....	20
9.1	FRA 2005 CATEGORIES AND DEFINITIONS.....	20
9.2	NATIONAL DATA.....	20
9.3	DATA FOR NATIONAL REPORTING TABLE T9	20
9.4	COMMENTS TO NATIONAL REPORTING TABLE T9	20
10	TABLE T10 – GROWING STOCK COMPOSITION	21
10.1	FRA 2005 CATEGORIES AND DEFINITIONS.....	21
10.2	DATA FOR NATIONAL REPORTING TABLE T10	21
11	TABLE T11 – WOOD REMOVAL	22

12	TABLE T12 – VALUE OF WOOD REMOVAL.....	22
13	TABLE T13 – NON-WOOD FOREST PRODUCT REMOVAL.....	22
14	TABLE T14 – VALUE OF NON-WOOD FOREST PRODUCT REMOVAL	22
15	TABLE T15 – EMPLOYMENT IN FORESTRY.....	22

1 Table T1 – Extent of Forest and Other wooded land

1.1 FRA 2005 Categories and definitions

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

1.2 National data

1.2.1 Data sources

References to sources of information	Quality (H/M/L)	Variable(s)	Year(s)	Additional comments
State Forest Fund Account, 1993	H	Area of forest and other land uses	1993	
State Forest Fund Account, 1998	H	Area of forest and other land uses	1998	
State Forest Fund Account, 2003	H	Area of forest and other land uses	2003	
FAOSTAT database	H	Total area, total land area, total area of inland water bodies	Applicable to 1990, 2000 and 2005	

1.2.2 Original data

All the data/ information in the reporting tables are given on the basis of the results of the State Forest Fund (SFF) Accounts.

1.3 Reclassification into FRA 2005 classes

The following reclassification has been done:

FRA class	National class
Forest	Areas covered by closed forest. Does not include areas with Saxaul (<i>Haloxylon</i> spp.) trees/stands (thickets), and bushes/brushwood
Other wooded land	Includes: Bushes, Saxaul (<i>Haloxylon</i> spp.) trees/stands (thickets), open (not closed) planted forests, nurseries, and open forest lands
Other land with tree cover	Orchards and gardens

The estimated area of “Other wooded land” is derived from the national classification within the State Forest Fund and includes also areas that would qualify as “Forest” according to the FRA 2005 definitions. However, no quantitative information is available that allow for an appropriate subdivision into “Forest” and “Other wooded land” according to the FRA 2005 definitions, therefore all this area has been classified as “Other wooded land”.

1.4 Analysis and processing of national data

1.4.1 Calibration

FAOSTAT data were used for the country area, total land area and the total area of inland water bodies.

After reclassification and applying the FAOSTAT data, the national data are as follows:

FRA 2005 Categories	Area (1000 hectares)		
	1993	1998	2003
Forest	3405.3	3597.8	3348.2
Other wooded land	13563.7	14751.7	15279.3
Other land	253001	251620.5	251342.5
...of which with tree cover ^{a)}	4.8	4.3	3.5
Inland water bodies	2520	2520	2520
TOTAL	272490	272490	272490

1.4.2 Estimation and forecasting

The calibrated national data for 1993 and 2003 were used for making estimations and forecasting to the three reporting years. The 1998 data were not used as it presented discrepancies due to internal reclassification of areas within the State Forest Fund. The result of the estimation and forecasting is presented in the table below:

FRA 2005 Categories	Area (1000 hectares)				
	1993	2003	1990	2000	2005
Forest	3 405	3 348	3 422	3 365	3 337
Other wooded land	13 564	15 279	13 049	14 765	15 622
Other land	253 001	251 343	253 499	251 840	251 011
...of which with tree cover ^{a)}	4.8	3.5	5.2	3.9	3.2
Inland water bodies	2 520	2 520	2 520	2 520	2 520
TOTAL	272 490	272 490	272 490	272 490	272 490

1.5 Data for National reporting table T1

FRA 2005 Categories	Area (1000 hectares)		
	1990	2000	2005
Forest	3 422	3 365	3 337
Other wooded land	13 049	14 765	15 622
Other land	253 499	251 840	251 011
...of which with tree cover ^{a)}	5.2	3.9	3.2
Inland water bodies	2 520	2 520	2 520
TOTAL	272 490	272 490	272 490

a) Area of “Other land with tree cover” is included in the area reported under “Other land” and should therefore be excluded when calculating the total area for the country.

1.6 Comments to National reporting table T1

The figures on forest area reported here differ substantially from the FRA 2000 main report. The figures in the FRA 2000 report were based on expert estimates where it seems as if a major part of areas covered by bushes and thickets, such as the Saxaul (*Haloxylon spp.*), were classified as forests. In this report, these areas are classified as Other wooded land.

The estimated areas of “Other wooded land” are derived from the national classification within the State Forest Fund and include also areas that would qualify as “Forest” according to the FRA 2005 definitions. However, no quantitative information is available that allow for an appropriate subdivision into “Forest” and “Other wooded land” according to the FRA 2005 definitions, therefore all this area has been classified as “Other wooded land”.

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
State Forest Fund Account, 1993	H	All available and related	1990	
State Forest Fund Account, 1998	H	All available and related	2000	The data concerning 2000 are forecasts
State Forest Fund Account, 2003	H	All available and related	2005	The data concerning 2005 are forecasts

2.2.2 Original data

All forests and OWL in Kazakhstan are publicly owned. See chapter 1.4.1 for total areas of forest and OWL.

2.3 Analysis and processing of national data

2.3.1 Estimation and forecasting

Already applied for deriving the data for T1, the latter being the basis for T2. Therefore, there was no need for apply estimation and forecasting for T2.

2.4 Data for National reporting table T2

FRA 2005 Categories	Area (1000 hectares)			
	Forest		Other wooded land	
	1990	2000	1990	2000
Private ownership	0	0	0	0
Public ownership	3422	3365	13049	14765
Other ownership	0	0	0	0
TOTAL	3422	3365	13049	14765

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 Original data

Data on area of forest and OWL were taken from table T1.

3.3 Reclassification into FRA 2005 classes

The following reclassification has been done:

FRA class	National class
Conservation of biodiversity	State forest natural monuments; Forests of the state nature reserves; Forests of the state nature wilderness areas
Social services	Forests of the state national parks; Forests of the state nature parks; Green zones of the settlements and habitat areas, and medical-prophylactic institutions
Multiple purpose	All other categories (see the above notes)

3.4 Data for National reporting table T3

FRA 2005 Categories / Designated function	Area (1000 hectares)					
	Primary function			Total area with function		
	1990	2000	2005	1990	2000	2005
Forest						
Production	0	0	0	ID	ID	ID
Protection of soil and water	0	0	0	ID	ID	ID
Conservation of biodiversity	31	33	530	31	33	530
Social services	251	218	428	251	218	428
Multiple purpose	3 140	3 114	2 379	not appl.	not appl.	not appl.
No or unknown function	0	0	0	not appl.	not appl.	not appl.
Total - Forest	3 422	3 365	3 337	not appl.	not appl.	not appl.
Other wooded land						
Production	0	0	0	ID	ID	ID
Protection of soil and water	0	0	0	ID	ID	ID
Conservation of biodiversity	62	71	406	62	71	406
Social services	51	129	268	51	129	268
Multiple purpose	0	0	0	not appl.	not appl.	not appl.
No or unknown function	12 936	14 565	14 948	not appl.	not appl.	not appl.
Total – Other wooded land	13 049	14 765	15 622	not appl.	not appl.	not appl.

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 Original data

Data on area of forest and OWL were taken from table T1.

4.3 Reclassification into FRA 2005 classes

FRA 2005 Categories	National class
Protective plantation	Open planted forests (non-closed plantations)

4.4 Data for National reporting table T4

FRA 2005 Categories	Area (1000 hectares)					
	Forest			Other wooded land		
	1990	2000	2005	1990	2000	2005
Primary	0	0	0	0	0	0
Modified natural	2 388	2 309	2 428	12 794	14 599	15 561
Semi-natural	0	0	0	0	0	0
Productive plantation	0	0	0	0	0	0
Protective plantation	1 034	1 056	909	255	166	61
TOTAL	3 422	3 365	3 337	13 049	14 765	15 622

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 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	365.61	363.46	363.65	10.68	11.88	16.71
Commercial growing stock	0	0	0	0	0	0

*/ - Growing stock of *Haloxylon* spp. thickets and willow brush-woods

Specification of country threshold values	Unit	Value	Complementary information
1. Minimum diameter at breast height of trees included in Growing stock (X)	cm	8	
2. Minimum diameter at the top end of stem (Y) for calculation of Growing stock	cm	3	
3. Minimum diameter of branches included in Growing stock (W)	cm	NDA	
4. Minimum diameter at breast height of trees in Commercial growing stock (Z)	cm	NDA	
5. Volume refers to “Above ground” (AG) or “Above stump” (AS)	AG / AS	NDA	
6. Have any of the above thresholds (points 1 to 4) changed since 1990	Yes/No	NDA	
7. If yes, then attach a separate note giving details of the change	Attachment	NDA	

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 Classification and definitions

The FRA 2005 classification, categories and definitions were applied for the compilation of this table.

6.2.2 Original data

Please see Table T10, reference year 1990.

6.3 Analysis and processing of national data

For the calculation of stem biomass, above/below ground biomass and deadwood stock FRA 2005 factors and ratios were used. The table below refer to year 1990.

Tree Species	Growing Stock (million m ³)	Basic density (tons/m ³)	Stem biomass (mln. tons)	BEF	AG biomass (mln. tons)	Root/Shoot Ratio	BG biomass (mln. tons)
<i>Pinus</i> spp.	110.93	0.42	46.59	1.3	60.57	0.32	19.38
<i>Betula</i> spp.	81.40	0.51	41.51	1.4	58.11	0.26	15.11
<i>Abies</i> spp.	57.50	0.40	23.00	1.3	29.90	0.32	9.57
<i>Picea</i> spp	31.55	0.40	12.62	1.3	16.41	0.32	5.25
<i>Larix</i> spp.	30.47	0.46	14.02	1.3	18.23	0.32	5.83
<i>Populus tremula</i>	26.21	0.35	9.17	1.4	12.84	0.26	3.34
<i>Populus</i> spp	9.10	0.35	3.19	1.4	4.47	0.26	1.16
<i>Pinus siberica</i>	8.46	0.42	3.55	1.3	4.62	0.32	1.48
<i>Salix</i> spp.	4.40	0.45	1.98	1.4	2.77	0.26	0.72
<i>Ulmus</i> spp.	2.05	0.55 ^{1/}	1.13	1.4	1.58	0.26	0.41
Remainder of species	3.54	0.50 ^{2/}	1.77	1.35 ^{3/}	2.39	0.29 ^{4/}	0.69
TOTAL for 1990	365.61		158.53		211.89		62.94
Deadwood					38.48^{5/}		

Notes: /1. data source: <http://www.sykestimber.co.uk/hardwoodspect.htm>

/2. a rounded number of 0.50 was chosen due to a lack of further information

/3. a median of 1.35 was chosen (between 1.30 and 1.40)

/4. a median of 0.29 was chosen (between 0.26 and 0.32)

/5. dead-live ratios provided by IPCC (0.14, deciduous forest biome) were used due to the absence of any further information

6.3.1 Estimation and forecasting

As there has not been any significant change in the wood volume composition by species groups from 1990 to 2005, it was possible to calculate the volumes of above ground biomass, below ground biomass and deadwood for 2000 and 2005 using weighted conversion factors in accordance with the FRA 2005 Guidelines:

Calculation of weighted conversion factors based on the 1990 data:

WCF agb = $211.89/365.61 = 0.579552$

WCF bgb = $62.94/365.61 = 0.172151$

Deadwood conversion factor = 0.14

Estimation for 2000:

AGB = $363.46 * 0.579552 = 210.64$

BGB = $363.46 * 0.172151 = 62.57$

Deadwood biomass = $(210.64 + 62.57) * 0.14 = 38.25$

Estimation for 2005:

AGB = $363.65 * 0.579552 = 210.75$

BGB = $363.65 * 0.172151 = 62.60$

Deadwood biomass = $(210.75 + 62.60) * 0.14 = 38.27$

The same coefficients were applied for the estimation of biomass of the OWL on the basis of information in T5 (total volume of wood for OWL for 1990, 2000 and 2005).

6.4 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	211.89	210.64	210.75	6.19	6.89	9.68
Below-ground biomass	62.94	62.57	62.60	1.84	2.05	2.88
Dead wood biomass	38.48	38.25	38.27	1.12	1.25	1.76
TOTAL	313.31	311.46	311.62	9.15	10.19	14.32

7 Table T7 – Carbon stock

7.1 FRA 2005 Categories and definitions

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

7.2 National data

7.2.1 Classification and definitions

The FRA 2005 classification, categories and definitions were applied for the compilation of this table

7.2.2 Original data

Please see table T6.

7.3 Analysis and processing of national data

7.3.1 Estimation and forecasting

The calculation of carbon stock (for the above-ground biomass, below-ground biomass and deadwood) was carried out by multiplying respective biomass data (see T6) by the standard value defined by IPCC-GPG for the calculation of carbon content in wood biomass (50%).

7.4 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	105.95	105.32	105.38	3.10	3.45	4.84
Carbon in below-ground biomass	31.47	31.29	31.30	0.92	1.03	1.44
Sub-total: Carbon in living biomass	137.42	136.61	136.68	4.02	4.48	6.28
Carbon in dead wood	19.24	19.13	19.14	0.56	0.63	0.88
Carbon in litter	ID	ID	ID	ID	ID	ID
Sub-total: Carbon in dead wood and litter	115.27	120.59	113.56	ID	ID	ID
Soil carbon to a depth of _____ cm	ID	ID	ID	ID	ID	ID
TOTAL CARBON	ID	ID	ID	ID	ID	ID

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 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 */	30.9	179.7	NDA	NDA
Disturbance by insects	NDA	NDA	NDA	NDA
Disturbance by diseases	NDA	NDA	NDA	NDA
Other disturbance	NDA	NDA	NDA	NDA

*/ - burned forest areas

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
2004 IUCN Red List of Threatened Species. < www.redlist.org >.	H	Endangered and vulnerable species	Up to 2004	

9.3 Data for National reporting table T9

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

9.4 Comments to National reporting table T9

Only one vulnerable tree species was found in the IUCN Red List: *Malus sieversii*

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 Data for National reporting table T10

FRA 2005 Categories / Species name (Scientific name and common name)	Growing Stock in Forests (million cubic meters)	
	1990	2000
Pine - <i>Pinus</i> spp.	110.93	103.96
Birch - <i>Betula</i> spp.	81.40	81.21
Fir - <i>Abies</i> spp.	57.50	59.15
Spruce - <i>Picea</i> spp	31.55	34.11
Larch - <i>Larix</i> spp.	30.47	30.12
Aspen - <i>Populus tremula</i>	26.21	28.92
Poplar - <i>Populus</i> spp	9.10	9.05
Cedar - <i>Pinus siberica</i>	8.46	9.01
Willow – <i>Salix</i> spp.	4.40	4.38
Elm - <i>Ulmus</i> spp.	2.05	2.09
Remainder of species	3.54	2.46
TOTAL	365.61	363.46

11 Table T11 – Wood removal

No data are available for this reporting table

12 Table T12 – Value of wood removal

No data are available for this reporting table

13 Table T13 – Non-wood forest product removal

No data are available for this reporting table

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

No data are available for this reporting table

15 Table T15 – Employment in forestry

No data are available for this reporting table