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Food and Agriculture Organization of the United Nations

GLOBAL FOREST RESOURCES ASSESSMENT

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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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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
Norwegian Institute of Land Inventory: The National Forest Inventory	H	Forest , other wooded land	2000: 1998-2002; 2005: forecast	The NFI data permit direct calculation of data according to the FRA categories and definitions. Does not cover areas above the coniferous forest limit and Finnmark county.
Norwegian Institute of Land Inventory: The National Forest Inventory	H	Productive forest land, non-productive forest land	1990: 1986-1993	Reclassification to FRA categories by distributing national categories from 1986-93 according to the same proportions as found in 1998-2002. Does not cover areas above the coniferous forest limit and Finnmark county.
Norwegian Mapping Authority: Topograpic maps of scale 1:50,000	M	Total forest and other wooded land	1970s-1980s	The only existing estimate of total forest and other wooded land (including mountains and Finnmark county) is based on calculations from topographic maps (no updates).
Statistics Norway: Census of Agriculture and Forestry 1989	M	Forest	1989	Data on forest area in Finnmark county is taken from the census, as no NFI data exists.

1.2.2 Classification and definitions

In the table below are listed the definitions used to extract the NFI data for the year 2000 categories:

National class	Definition
Forest	Information generated from NFI database. The FRA 2005 definition is "Land spanning more than 0.5 hectares...". Norway uses a minimum area of 0.1 ha and does not consider the width of the area. For the period 1998-2002, "forest" was assessed as "productive forest land" (see below) plus "non-productive forest land" with a crown cover of more than 10%.
Other wooded land	Should be corresponding to FRA definition. OWL has been calculated as (total forest and other wooded land from topographic maps) – (total forest from the NFI) – (forest in Finnmark county)
Other land	According to FRA 2005 definition
Other areas with land use forestry	Will include e.g. forest roads, forest depots, landings, smaller gravel pits, etc. Has been added to forest area to comply with FRA 2005.
Other land with tree cover	No available data
Inland water bodies	According to FRA 2005 definition

The following table lists the definitions to extract the national data for year 1990 to be reclassified into FRA 2005 categories. The same definition of productive forest land is also applied for the Census of Agriculture and Forestry 1989.

National class	Definition
Productive forest land	Productive forest land is land which has an annual yield capacity of at least 1 m^3 wood including bark per hectare under favourable stand conditions. Classification should not be affected if the land is temporarily without trees. More critical factors are the yield capacity and that the land is not utilized for other purposes than wood production.
Non-productive forest land	This type of land includes areas with an annual yield capacity between 0.1 and 1 m^3 wood including bark per hectare under favourable stand conditions. As for productive forest land, consideration should be given to yield capacity and not a temporary absence of trees.
Other land	According to FRA 2005 definition
Other areas with land use forestry	Will include e.g. forest roads, forest depots, landings, smaller gravel pits, etc. Has been added to forest area to accommodate FRA 2005.
Inland water bodies	According to FRA 2005 definition

It is not known whether an exact definition was used for the construction of forest layer of the topographic maps. However, the general experience is that this area corresponds fairly well with the total area of productive and non-productive forest land, as assessed in various surveys.

1.2.3 Original data

National classes	Area (1000 hectares)
	1990 (1986-93)
Productive forest land	7 239
Non-productive forest land	2 421
Forest in Finnmark county	83
Other land with land use forestry	40
Additional forest/OWL (maps)	2 217
Other land	18 625
Inland water	1 751
Total land area	**32 376**

National classes	Area (1000 hectares)
	2000 (1998-2002)
Forest (NFI)	9 161
Forest in Finnmark county	83
Other land with land use forestry	57
Additional forest/OWL (maps)	2 699
Other land	18 625
Inland water	1 751
Total land area	**32 376**

1.3 Analysis and processing of national data

1.3.1 Calibration

Not applied.

1.3.2 Estimation and forecasting

The only forecasting that has been carried out is for the year 2005. In that case a linear extrapolation has been applied. No estimation for the other reference years has been necessary, since the average year of the data collection periods are 1990 and 2000, respectively. The total area of forest and other wooded land is assumed to be constant, thus there will be an extrapolation according to an increasing trend for forest, and a corresponding decreasing thend for other wooded land.

1.4 Reclassification into FRA 2005 classes

In order to make the 1990 national data consistent with the FRA 2005 categories, the national categori “non-productive forest land” was distributed into the categories “forest” and “other wooded land”, using the same proportions as were obtained for year 2000. 73% of non-productive forest (of area covered by the inventory) was found to satisfy the requirements of FRA forest.

National classes	Forest	OWL	Other land	OWLTC	I. water	Total
	Area (1000 hectares)					
Productive forest land	7 239	0	0	n.d.a.	0	7 239
Non-productive forest land	1 768	653	0	n.d.a.	0	2 421
Forest in Finnmark county	83	0	0	n.d.a	0	83
Other land with land use forestry	40	0	0	n.d.a.	0	40
Additional forest/OWL (maps)	0	2 217	0	n.d.a.	0	2 217
Other land	0	0	18 625	n.d.a.	0	18 625
Inland water	0	0	0	n.d.a.	1 751	1 751
Total	9 130	2 870	18 625	n.d.a.	1 751	32 376

1.5 Data for National reporting table T1

FRA 2005 Categories	Area (1000 hectares)		
	1990	2000	2005
Forest	9130	9301	9387
Other wooded land	2870	2699	2613
Other land	18625	18625	18625
...of which with tree cover [1)]	n.d.a.	n.d.a.	n.d.a.
Inland water bodies	1751	1751	1751
TOTAL	**32376**	**32376**	**32376**

1) 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 category "other land" has been assigned the same area at all three reference years. It is not likely that this is completely correct, but caused by the fact that there exists no other estimate of total forest and other wooded land than the one based on calculations from topographic maps. As there is no regular updating of these maps, the sum of forest and other wooded land will remain constant, thus also the category "other land".

The areas reported in this table do not include the islands of Svalbard and Jan Mayen.

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
Statistics Norway: Census of Agriculture and Forestry 1989	M	Forest	1989	Ownership category has not been recorded for each NFI sample plot. The Census does not apply the same area categories as the NFI and does not sum up to the same totals, thus a reclassification has been necessary.

2.2.2 Classification and definitions

Comply with FRA 2005 definitions.

2.2.3 Original data

The relevant data from the Census of Agriculture and Forestry 1989 can be summarized as shown in the following table:

	Productive forest land	OTHER AREA UNDER THE LIMIT OF PRODUCTIVE FOREST	Wooded land above the limit of productive forest
	Percentage	Percentage	Percentage
Private	88.2	80.6	67.7
Public	11.8	19.4	32.3
Total	100	100	100

Besides, the original data for table T1 (as shown in section 1.2.3) has been used as a starting point for distribution of the various categories under forest and other wooded land.

2.3 Analysis and processing of national data

2.3.1 Calibration

Not applied

2.3.2 Estimation and forecasting

Not applied

2.4 Reclassification into FRA 2005 classes

Reclassification of original data has been carried out for forest and other wooded land, as shown in section 1.4. Then the percentages of ownership from the table in 2.2.3. have been used to distribute the original land use classes as given in 1.2.3. into the ownership categories. The national categories have been divided into "public" and "private" according to the distributions shown below. The same distribution scheme has been used both for the 1990 and the 2000 data.

National classes	Public	Private
	Percentage	Percentage
Productive forest land	11.8	88.2
Non-productive forest land with crown cover>10%	19.4	80.6
Forest in Finnmark county	100	0
Other land with land use forestry	11.8	88.2
Additional forest/OWL (maps)	32.3	67.7

2.5 Data for National reporting table T2

FRA 2005 Categories	Area (1000 hectares)			
	Forest		Other wooded land	
	1990	2000	1990	2000
Private ownership	7844	8002	2027	1907
Public ownership	1286	1299	843	792
Other ownership	-	-	-	-
TOTAL	**9130**	**9301**	**2870**	**2699**

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
Directorate for Nature Management	M	Protected forest areas of various categories	<1990, 1990-1999, >=2000	
Ministry of Food and Agriculture	M	Area of protection forest	1993-94	Area of protection forest has in principle been stable over several decades. A survey was made in 1993-94, but the information would be valid for all three reference years.
Ministry of Food and Agriculture	M	Area of peri-urban forest	1977	Area of peri-urban forest near Oslo was delineated on map in 1977, and has not been revised since then.
Norwegian Mapping Authority	M	Area of forest in landscape protected areas	2000	A summary of forest in landscape protected areas was made in 2000. Most of the landscape protected areas were established before 1990, and the area has been used in the calculation for all three reference years.

3.2.2 Classification and definitions

The same national categories of forest as listed under 1.2.2 have been applied by the data sources listed above.

National class	Definition
Production	Productive forest with no specific restrictions Military training fields
Protection of soil and water	Productive and non-productive forest officially declared as protection forest
Conservation of biodiversity	Productive and non-productive forest officially declared as protected area (nature reserve, national park, voluntarily protected by State Forest Company)
Social services	None
Multiple purpose	Non-productive forest with no specific restrictions Productive and non-productive forest in landscape protected areas Productive and non-productive forest in peri-urban forest areas
No or unknown function	None

3.2.3 Original data

The original data for table T1 (as shown in section 1.2.3) has been used as a starting point for distribution of the various categories under forest and other wooded land.

1990:

Designation category	Productive forest land	Non-productive forest land	Sum
Production	5558	0	5558
Protection of soil and water	1541	2740	4281
Conservation of biodiversity	27	134	161
Multiple purpose	236	1764	2000
Total	7362	4638	12000

2000:

Designation category	Productive forest land	Non-productive forest land	Sum
Production	5788	0	5788
Protection of soil and water	1541	2740	4281
Conservation of biodiversity	62	155	217
Multiple purpose	236	1478	1714
Total	7627	4373	12000

2005:

Designation category	Productive forest land	Non-productive forest land	Sum
Production	5904	0	5904
Protection of soil and water	1541	2740	4281
Conservation of biodiversity	79	155	234
Multiple purpose	236	1345	1581
Total	7760	4240	12000

3.3 Analysis and processing of national data

3.3.1 Calibration

Not applied

3.3.2 Estimation and forecasting

The only forecasting that has been carried out is for the year 2005. That would be cooresponding to what has been applied for table T1. In that case a linear extrapolation has been applied. No estimation for the other reference years has been necessary, since the average year of the data collection periods are 1990 and 2000, respectively.

3.4 Reclassification into FRA 2005 classes

The data listed under section 3.2.3 have been reclassified by assuming that 38.1, 38.3 and 38.4% of national non-productive forest would be included into "forest", and the rest into "other wooded land", for the years 1990, 2000 and 2005, respectively.

Total area with function has been calculated as follows:

Production:	PF Production + PF Multiple Purpose
Protection:	PF Protection
Conservation:	Total area of Forest and OWL respectively
Social services:	Total area of Forest and OWL respectively

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	5558	5788	5904	6467	6590	6656
Protection of soil and water	2585	2590	2593	2585	2590	2593
Conservation of biodiversity	78	121	138	9130	9301	9387
Social services	n.d.a.	n.d.a.	n.d.a.	9130	9301	9387
Multiple purpose	909	802	752	not appl.	not appl.	not appl.
No or unknown function	0	0	0	not appl.	not appl.	not appl.
Total - Forest	**9130**	**9301**	**9387**	**not appl.**	**not appl.**	**not appl.**
Other wooded land						
Production	0	0	0	0	0	0
Protection of soil and water	1696	1691	1688	1696	1691	1688
Conservation of biodiversity	83	96	96	2870	2699	2613
Social services	n.d.a.	n.d.a.	n.d.a.	2870	2699	2613
Multiple purpose	1091	912	829	not appl.	not appl.	not appl.
No or unknown function	0	0	0	not appl.	not appl.	not appl.
Total – Other wooded land	**2870**	**2699**	**2613**	**not appl.**	**not appl.**	**not appl.**

3.6 Comments to National reporting table T3

The function of “protection forest” included in the above table may not be strictly limited to protection of soil and water, but would also include protection of other ecosystem functions, and to protect infrastructure and managed natural resources against natural hazards.

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

References to sources of information	Quality (H/M/L)	Variable(s)	Year(s)	Additional comments
Norwegian Institute of Land Inventory: The National Forest Inventory	H	Forest , other wooded land, tree species composition	2000: 1998-2002; 2005: forecast	The NFI data permit direct calculation of data according to the FRA categories and definitions. Does not cover areas above the coniferous forest limit and Finnmark county.
Norwegian Institute of Land Inventory: The National Forest Inventory	H	Productive forest land, non-productive forest land	1990: 1986-1993	Reclassification to FRA categories by distributing national categories from 1986-93 according to the same proportions as found in 1998-2002. Does not cover areas above the coniferous forest limit and Finnmark county.
Ministry of Food and Agriculture: Statistics of planting 1950-2003	H	Annual planted area in coastal districts	1990-1999; 2000-2003	

4.2.2 Classification and definitions

National class	Definition
Primary	Land considered udisturbed by man. No data exist. The estimates given in the tables are "expert guesses".
Modified natural	Not defined for forest. The classes "modified natural" and "semi-natural" have been merged. For other wooded land all areas that are not considered primary have been assigned to this group, since planting/seeding hardly has taken place on other wooded land.
Semi-natural	Forest which has not been classified as "primary" or "plantation" according to this enquiry.
Productive plantation	Plantation in productive forests of "introduced species" (including Picea abies in areas where the species does not occur naturally).
Protective plantation	Forest and other wooded land plantations mainly concerning soil and water conservation.

4.2.3 Original data

FRA 2005 Categories	Area (1000 hectares)			
	Forest		Other wooded land	
	1990	2000	1990	2000
Primary	250	250		
Modified natural				
Semi-natural	8658	8796		
Productive plantation	222	255		
Protective plantation	n.d.a.	n.d.a.	n.d.a.	n.d.a.
TOTAL	**9130**	**9301**	**2870**	**2699**

4.3 Analysis and processing of national data

4.3.1 Calibration

Not applied.

4.3.2 Estimation and forecasting

Forecasting of forest and other wooded land has been carried out for 2005, as described in section 1.3.2.

4.4 Reclassification into FRA 2005 classes

There exists no data on the distribution of OWL by the different categories. Generally it can be said that planting has not been taking place on these areas to any noticeable degree. As a rough estimation, 10% has been assigned to the "primary" category and 90% to the "modified natural" category.

FRA 2005 Categories	Area (1000 hectares)			
	Forest		Other wooded land	
	1990	2000	1990	2000
Primary	250	250	287	270
Modified natural	n.d.a.	n.d.a.	2583	2429
Semi-natural	8658	8796	0	0
Productive plantation	222	255	0	0
Protective plantation	n.d.a.	n.d.a.	n.d.a.	n.d.a.
TOTAL	**9130**	**9301**	**2870**	**2699**

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	250	250	250	287	270	261
Modified natural	n.d.a.	n.d.a.	n.d.a.	2583	2429	2352
Semi-natural	8658	8796	8875	0	0	0
Productive plantation	222	255	262	0	0	0
Protective plantation	n.d.a.	n.d.a.	n.d.a.	n.d.a.	n.d.a.	n.d.a.
TOTAL	**9130**	**9301**	**9387**	**2870**	**2699**	**2613**

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
Norwegian Institute of Land Inventory: The National Forest Inventory	H	Growing stock, commercial growing stock	2000: 1998-2002; 2005: forecast	The NFI data permit direct calculation of data according to the FRA categories and definitions. Does not cover areas above the coniferous forest limit and Finnmark county.
Norwegian Institute of Land Inventory: The National Forest Inventory	H	Growing stock, commercial growing stock	1990: 1986-1993	Reclassification to FRA categories by distributing national categories from 1986-93 according to the same proportions as found in 1998-2002. Does not cover areas above the coniferous forest limit and Finnmark county.
Norwegian Mapping Authority: Topograpic maps of scale 1:50,000	M	Total forest and other wooded land	1970s-1980s	The only existing estimate of total forest and other wooded land (including mountains and Finnmark county) is based on calculations from topographic maps (no updates).
Statistics Norway: Census of Agriculture and Forestry 1989	M	Forest	1989	Data on forest area in Finnmark county is taken from the census, as no NFI data exists.

5.2.2 Classification and definitions

National class	Definition
Growing stock	Volume over bark of all living trees more than 5 cm in diameter at breast height. Includes living trees on all forest areas (see T1) and other wooded land areas. Stem volume above stump of living trees includes bark, excludes branches. Data has been estimated for forest in Finnmark county and for not inventoried other wooded land (mountain forest).
Commercial growing stock	Growing stock in forest available for wood supply. Stem volume above stump of living trees includes bark, excluded branches and tops (minimum dbh=10 cm)

5.2.3 Original data

National classes	Volume (million cu.m. o.b.)
	1990 (1986-93)
Productive forest land	657
Non-productive forest land	45
Forest in Finnmark county	3
OWL (not inventoried)	32
Total growing stock	737
Of which, commercial growing stock	540

National classes	Volume (million cu.m. o.b.)
	2000 (1998-2002)
Forest (NFI)	806
Other wooded land (NFI)	4
Forest in Finnmark county	3
OWL (not inventoried)	39
Total growing stock	852
Of which, commercial growing stock	630

Finnmark county and the major part of other wooded land are not covered by the NFI. Area estimates as shown in T1 have been used together with estimates of average volume based on previous partial inventories. For Finnmark, average volume based on inventories for forest management planning in the 1980s have been used (35 m^3 pr. ha). For other wooded land, the estimate is based on a limited number of sample plots that were measured by the NFI in mountain districts of Nordland and Troms counties in 1992-93 (14.5 m^3 pr. ha).

Data on commercial growing stock has been derived by excluding trees on areas with steep and difficult terrain, excluding trees with dbh<10 cm and reducing the growing stock by an estimated 0.005 cu.m. per tree for top to a diameter of 7 cm. Besides, it has been calculated for productive forest with land utilization "forestry" only. The tops amount to 14.5 million m^3 in 1990 and 17.0 million m^3 in 2000.

5.3 Analysis and processing of national data

5.3.1 Calibration

Not applied

5.3.2 Estimation and forecasting

Estimation is not needed, because data is available for current reference years. Forecasting is made for 2005, using linear extrapolation. A separate and independent forecasting has been made for total growing stock and for commercial growing stock, using data from 1990 and for 2000.

5.4 Reclassification into FRA 2005 classes

National classes	Volume (million cu.m. o.b.)	Forest	OWL
	1990 (1986-93)		
Productive forest land	657	657	0
Non-productive forest land	45	41	4
Forest in Finnmark county	3	3	0
OWL (not inventoried)	32	0	32
Total growing stock	737	701	36
Of which, commercial growing stock	540	540	0

For 1990, the growing stock on inventoried non-productive forest land has been reclassified into FRA classes forest and other wooded land, using the same distribution among the corresponding classes as for 2000.

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	701	809	863	36	43	47
Commercial growing stock	540	630	675	0	0	0

Specification of country threshold values	Unit	Value	Complementary information
1. Minimum diameter at breast height of trees included in Growing stock (X)	cm	5	
2. Minimum diameter at the top end of stem (Y) for calculation of Growing stock	cm	0	
3. Minimum diameter of branches included in Growing stock (W)	cm	not included	
4. Minimum diameter at breast height of trees in Commercial growing stock (Z)	cm	10	
5. Volume refers to “Above ground” (AG) or “Above stump” (AS)	AG / AS	AS	
6. Have any of the above thresholds (points 1 to 4) changed since 1990	Yes/No	No	
7. If yes, then attach a separate note giving details of the change	Attachment		

6 Table T6 – Biomass stock

6.1 FRA 2005 Categories and definitions

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

6.2 National data

6.2.1 Data sources

References to sources of information	Quality (H/M/L)	Variable(s)	Year(s)	Additional comments
Norwegian Institute of Land Inventory: The National Forest Inventory	H	Growing stock, commercial growing stock	2000: 1998-2002; 2005: forecast	The NFI data permit direct calculation of data according to the FRA categories and definitions. Does not cover areas above the coniferous forest limit and Finnmark county.
Norwegian Institute of Land Inventory: The National Forest Inventory	H	Growing stock, commercial growing stock	1990: 1986-1993	Reclassification to FRA categories by distributing national categories from 1986-93 according to the same proportions as found in 1998-2002. Does not cover areas above the coniferous forest limit and Finnmark county.
Swedish University of Agricultural Sciences: Marklund, L.G. 1988; Biomass functions for pine, spruce and birch in Sweden.	M	Biomass of different components of living trees	1988	No study exists to indicate the quality of estimates when applied for Norwegian forests.

6.2.2 Classification and definitions

National class	Definition
Above-ground biomass	All living biomass above the soil including stem, stump, branches, bark, seeds, and foliage. Only the trees with a dbh of at least 5 cm are included.
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. Components of standing trees having a dbh less than 5 cm are excluded, as are also the components of wood lying on the ground having a maximum diameter of at least 10 cm. Woody biomass of tree parts shorter than 0.6 m or thinner than 10 cm (including corresponding stumps and roots) is not assessed, as well as the biomass of stumps and roots of felled trees.

6.2.3 Original data

National classes	Above ground biomass	Below ground biomass	Dead wood biomass	Total biomass (million metric tonnes)
	2000 (1998-2002)			
Forest (NFI)	548.350	95.578	37.184	681.112
Other wooded land (NFI)	4.738	0.790	0.561	6.089
Forest in Finnmark county	1.862	0.329	0.147	2.338
OWL (not inventoried)	29.559	2.923	4.353	36.835
Total biomass	584.509	99.620	42.245	726.374

Growing stock comprises trees with a dbh of at least 5 cm, as reported in table T5. Biomass has been calculated applying biomass functions for living trees according to Marklund (1988). Separate sets of functions have been used for spruce, pine and for broadleaved trees. The functions originally developed for birch have been applied for all broadleaved trees. The tree components: dead branches, living branches, stem under bark, bark, stumps, course roots and fine roots have been estimated, using individual functions for each component. For trees with a dbh of at least 10 cm in maturing and mature forest, and at least 5 cm in other productive forest, functions with dbh and h as explanatory variables have been used. For smaller trees, and for other forest and other wooded land, only dbh has been used as explanatory variable.

Dead wood volume for inventoried forest and other wooded land was calculated from NFI field data 1994-98. Since only data from one single assessment exists, these values have been kept constant for all three reference years.

In the same way as for table T5, rough estimates of growing stock in Finnmark county and for other wooded land above the coniferous forest limit have been included. Dead wood in these two regions have been estimated at 10% and 20% of total growing stock, respectively (expert guesses). Biomass of dead wood has been reduced by 33% in order to compensate for loss of

biomass because of decay. For volumes where individual tree data has not been available, Marklund's functions could not be used. In these cases, average total biomass per m^3 stem volume and distribution by tree components of corresponding tree species classes have been used. That means, proportions of biomass components obtained from the single tree functions have been used to create conversion factors for other parts of the data.

6.3 Analysis and processing of national data

6.3.1 Calibration

Not applied

6.3.2 Estimation and forecasting

Estimation and forecasting of the growing stock have been described in table T5. For dead wood, neither estimation nor forecasting has been applied because the changes in dead wood volumes are assumed to be slow, and because the biomass content may include other considerable error sources (e.g. biomass of roots). Also, a complete assessment of dead trees has been carried out only during the period 1994-98, and these results have been reported for all three reference years. Living biomass for 1990 and 2005 has been assessed using the weighted conversion factors as described in the "Guidelines for country reporting", page 29. The growing stock figures in table T5 have been converted according to the following factors:

	Above ground	Below ground
Forest	0.68	0.12
Other wooded land	0.79	0.09

6.4 Reclassification into FRA 2005 classes

Not applied

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	477	550	587	28	34	37
Below-ground biomass	83	96	103	3	4	4
Dead wood biomass	37	37	37	5	5	5
TOTAL	**597**	**683**	**727**	**36**	**43**	**46**

Thresholds used by the country are the following:

Table: Biomass of Forest and OWL

Item	Unit	Information
Area over which woody biomass and tree biomass has been measured	Million ha	Forest 1990: 9.13 2000: 9.30 OWL 1990: 2.87 2000: 2.70
Average height of the stumps	Cm	Appr. 10
Minimum diameter at breast height of standing trees for dead woody biomass measurements	Cm	5
Minimum diameter at the butt end of lying logs for dead woody biomass measurements	Cm	10
Minimum diameter at breast height of living standing trees for tree biomass measurements	Cm	5
Minimum diameter of the branches for dead woody biomass and tree biomass measurements	Cm	0
Minimum diameter of the roots for dead woody biomass and tree biomass measurements	Cm	0.2
Stump biomass is in above/below ground tree biomass	Above/Below	Above
Whether biomass includes or excludes bark	Includes/Excludes	Includes
Have above thresholds changed since 1990	Yes/No	No

7 Table T7 – Carbon stock

7.1 FRA 2005 Categories and definitions

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

7.2 National data

7.2.1 Data sources

References to sources of information	Quality (H/M/L)	Variable(s)	Year(s)	Additional comments
National reporting table T6	H	Above-ground biomass, below-ground biomass, dead wood biomass	2000: 1998-2002; 2005: forecast 1990: 1986-1993	

7.2.2 Classification and definitions

No specific definition available.

7.2.3 Original data

Forest carbon data was estimated using biomass data as given in table T6 and multiplied by the default conversion factor of 0.5.

7.3 Analysis and processing of national data

7.3.1 Calibration

Not applied

7.3.2 Estimation and forecasting

Not applied

7.4 Reclassification into FRA 2005 classes

Not applied

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	238	275	293	14	17	19
Carbon in below-ground biomass	42	48	51	2	2	2
Sub-total: Carbon in living biomass	**280**	**323**	**344**	**16**	**19**	**21**
Carbon in dead wood	19	19	19	2	2	2
Carbon in litter	n.d.a.	n.d.a.	n.d.a.	n.d.a.	n.d.a.	n.d.a.
Sub-total: Carbon in dead wood and litter						
Soil carbon to a depth of _____ cm	n.d.a.	n.d.a.	n.d.a.	n.d.a.	n.d.a.	n.d.a.
TOTAL CARBON	**299**	**342**	**363**	**18**	**21**	**23**

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
The Directorate for Civil Protection and Emergency Planning	H	Burnt forest area	1990: 1993-1994 2000: 1998-2002	No statistics are available for burnt forest area prior to 1993. Thus an average of 1993 and 1994 figures have been used to represent the reference year 1990.
Norwegian Institute of Land Inventory: The National Forest Inventory	M	Stand damages	2000: 1998-2002	
Norwegian Institute of Land Inventory: The National Forest Inventory	M	Stand damages	1990: 1986-1993	

8.2.2 Classification and definitions

National class	Definition
Disturbance by fire	Area of burnt forest area, as reported by The Directorate for Civil Protection and Emergency Planning.
Other disturbances	Disturbances (according to the NFI) are only assessed for productive forest land, i.e. forest land with a production capacity at least 1 m^3/ha/year. A disturbance should be assessed only if the negative effect is at least 10% of standing volume, number of trees or annual increment. Minimum affected area is 0.1 ha. Damages mostly affecting smaller areas, such as technical (human impact) damages, rot damage, drought and frost are not included.

8.2.3 Original data

FRA-2005 Categories	Average annual area affected (1000 hectares)			
	Forests		Other wooded land	
	1990	2000	1990	2000
Disturbance by fire1)	0.10	0.05	0.13	0.12
Disturbance by insects	13	19	n.d.a.	n.d.a.
Disturbance by storm	46	23.	n.d.a.	n.d.a.
Disturbance by snow	76	72	n.d.a.	n.d.a.
Disturbance by grazing	21	45	n.d.a.	n.d.a.

1)Forest fires are recorded as separate categories for productive forest and non-productive forest.

8.3 Analysis and processing of national data

8.3.1 Estimation and forecasting

Not applied

8.4 Reclassification into FRA 2005 classes

Disturbance by snow, storm and grazing are merged into the category “other” disturbance.

Forest fires on “non-productive forest land” has been reported as “other wooded land”, although it is likely that a part of it would belong to FAO “forest”.

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	0.10	0.05	0.13	0.12
Disturbance by insects	13	19	n.d.a.	n.d.a.
Disturbance by diseases	n.d.a.	n.d.a.	n.d.a.	n.d.a.
Other disturbance	143	140	n.d.a.	n.d.a.

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
Lid, J. & Lid, D.T. 1994. Norsk Flora *(Flora of Norway)*	H	Tree species	1994	
http://www.redlist.org	H	Critically, endangered and vulnerable tree species	2000	

9.2.2 Classification and definitions

A tree is defined as a woody perennial with a single main stem or in case of coppice with several stems, having a more or less definite crown.

9.2.3 Original data

Not applicable.

9.3 Data for National reporting table T9

FRA 2005 Categories	**Number of species (year 2000)**
Native tree species	32
Critically endangered tree species	0
Endangered tree species	0
Vulnerable tree species	0

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
Norwegian Institute of Land Inventory: The National Forest Inventory	H	Growing stock composition	2000: 1998-2002;	The NFI data permit direct calculation of data according to the FRA categories and definitions. Does not cover areas above the coniferous forest limit and Finnmark county.
Norwegian Institute of Land Inventory: The National Forest Inventory	H	Growing stock composition	1990: 1986-1993	Reclassification to FRA categories by distributing national categories from 1986-93 according to the same proportions as found in 1998-2002. Does not cover areas above the coniferous forest limit and Finnmark county.
Statistics Norway: Census of Agriculture and Forestry 1989	M	Forest	1989	Data on forest area in Finnmark county is taken from the census, as no NFI data exists.

10.2.2 Original data

Original data has been extracted directly from the database for the year 2000, and an estimated volume of 2.1 million m^3 Scots pine and 0.8 million m^3 Downy birch has been added to represent Finnmark county. For 1990, the same assumption has been made. Since FAO "forest" cannot be derived directly from 1990 data, the standing volume on "non-productive forest land" of each species has been distributed into "forest" and "other wooded land" according to the proportions found from the year 2000 data.

10.3 Analysis and processing of national data

10.3.1 Calibration

Not applied.

10.3.2 Estimation and forecasting

Not applied.

10.4 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**
Picea abies – Norway spruce	322.3	354.1
Pinus sylvestris – Scots pine	222.1	264.8
Betula pubescens – Downy birch *)	105.6	119.9
Populus tremula – European aspen	12.3	14.3
Alnus incana – Grey alder	13.0	14.0
Sorbus aucuparia – European mountain ash	n.d.a.	7.8
Quercus robur – English oak	6.1	7.4
Salix caprea – Goat willow	n.d.a.	6.1
Betula pendula – Silver birch	n.d.a.	5.7
Picea sitchensis – Sitka spruce	n.d.a.	3.1
Remainder of species	19.6	11.8
TOTAL	**701**	**809**

*) For 1990, Silver birch has not been separated from Downy birch.

11 Table T11 – Wood removal

11.1 FRA 2005 Categories and definitions

Category	Definition
Industrial wood removal	The wood removed (volume of roundwood over bark) for production of goods and services other than energy production (woodfuel).
Woodfuel 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

References to sources of information	Quality (H/M/L)	Variable(s)	Year(s)	Additional comments
Statistics Norway: Forestry Statistics	H	Industrial wood removal , removal of woodfuel for sale	1990: 1988-1992; 2000: 1998-2002 2005: forecast	
Statistics Norway: Census of Agriculture and Forestry 1989	M	Wood cut for own consumption or ceded on usufruct, fuelwood cut of other than owner or persons with ceded usufruct	1988	
Statistics Norway: Sample Survey of Agriculture 2004	M	Wood cut for own consumption	2002-2003	

11.2.2 Classification and definitions

National class	Definition
Industrial wood removal	The wood removed (volume of roundwood under bark) for production of goods and services other than energy production (woodfuel). It also includes wood for construction etc. for private use by forest owner.
Woodfuel removal	The wood removed for energy production purposes, regardless whether for industrial, commercial or domestic use.

11.2.3 Original data

Removal category	million m^3 u.b.	million m^3 u.b.
Year	1990	2000
Industrial roundwood for sale	9.627	7.560
Wood for own consumption (construction etc.)	0.199	0.139
Woodfuel for sale	0.443	0.724
Woodfuel for own consumption	0.579	0.537
Total	10.848	8.960

11.3 Analysis and processing of national data

Conversion factor used to convert volume under bark into volume over bark is 1.15.

Removal category	million m^3 o.b.	million m^3 o.b.
Year	1990	2000
Industrial roundwood for sale	11.071	8.694
Wood for own consumption (construction etc.)	0.229	0.160
Woodfuel for sale	0.509	0.832
Woodfuel for own consumption	0.666	0.618
Total	12.475	10.304

11.3.1 Estimation and forecasting

Estimation has not been applied. Forecasting has been carried out for year 2005 by means of linear extrapolation. The forecasting has been made separately for industrial roundwood and woodfuel, according to the FRA categories.

11.4 Reclassification into FRA 2005 classes

Removal category	Industrial roundwood	Woodfuel
	%	%
Industrial roundwood for sale	100	0
Wood for own consumption (construction etc.)	100	0
Woodfuel for sale	0	100
Woodfuel for own consumption	0	100

11.5 Data for National reporting table T11

FRA 2005 Categories	Volume in 1000 cubic meters of roundwood over bark					
	Forest			Other wooded land		
	1990	2000	2005	1990	2000	2005
Industrial roundwood	11300	8854	7631	-	-	-
Woodfuel	1175	1450	1588	-	-	-
TOTAL for Country	**12475**	**10304**	**9219**	**-**	**-**	**-**

12 Table T12 – Value of wood removal

12.1 FRA 2005 Categories and definitions

Category	Definition
Value of industrial wood removal	Value of the wood removed for production of goods and services other than energy production (woodfuel).
Value of woodfuel 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

References to sources of information	Quality (H/M/L)	Variable(s)	Year(s)	Additional comments
Statistics Norway: Forestry Statistics	H	Average prices of roundwood for sale	1990: 1988-1992; 2000: 1998-2002 2005: forecast	

12.2.2 Classification and definitions

National class	Definition
Value of industrial wood removal	Value of the wood removed for production of goods and services other than energy production (woodfuel). That also includes wood for private use by forest owner.
Value of woodfuel removal	Value of the wood removed for energy production purposes, regardless whether for industrial, commercial or domestic use.

12.2.3 Original data

Category	Average prices (NOK/m^3 u.b.)	
	1990	2000
All roundwood except woodfuel	331	323
Woodfuel	217	204

Category	Value of roundwood removal (1000 NOK)					
	Forest			Other wooded land		
	1990	2000	2005	1990	2000	2005
Industrial roundwood	3252406	2486777	2116773	-	-	-
Woodfuel	221774	257244	273412	-	-	-
TOTAL for Country	**3474180**	**2744021**	**2390185**	**-**	**-**	**-**

12.3 Analysis and processing of national data

The value of roundwood was calculated by multiplying average price per m^3 by volume of wood removals under bark. The price of fuelwood is assumed to be equivalent to the price of pulpwood from broadleaved trees.

Exchange rates (according to Appendix 4 in guidelines) used to convert into USD. Exchange rate for 1990 is 5.097, for 2000 is 8.849, for 2005 is 6.680 (=2003 exchange rate).

12.3.1 Estimation and forecasting

Estimation has not been applied. Forecasting for year 2005 has been carried out by using the quantities in table T11 as a basis. The average timber prices (in NOK) has been subject to linear extrapolation. Finally the volumes have been multiplied by the timber prices, then converted to USD in order to obtain the result in table T12.

12.4 Reclassification into FRA 2005 classes

Not applied.

12.5 Data for National reporting table T12

FRA 2005 Categories	Value of roundwood removal (1000 USD)					
	Forest			Other wooded land		
	1990	2000	2005	1990	2000	2005
Industrial roundwood	550602	281023	316882	-	-	-
Woodfuel	37544	29070	40930	-	-	-
TOTAL for Country	**588146**	**310093**	**357812**	**-**	**-**	**-**

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

References to sources of information	**Quality (H/M/L)**	**Variable(s)**	**Year(s)**	**Additional comments**
Statistics Norway: Hunting statistics	H	Yield of big game and small game hunting	1990: 1988-2002 2000: 1998-2002 2005: forecast	

There are no official statistics for other non-wood forest products. Information on these is obtained from sales or marketing organisations and is based on previous statements or subjective assessment.

13.2.2 Classification and definitions

National class	**Definition**
FRA 2005 categories applied	FRA 2005 definitions used

13.2.3 Original data

NWFP products	Quantity harvested/collected	Total		
1. Food	**Unit:**	**1990**	**2000**	**2005**
Wild berries [1)]	1 000 kg	25000	20000	17500
Mushrooms [1)]		1500	1500	1500
Sum. 1. Food		**26500**	**21500**	**19000**

Footnotes:

1) Rough estimates

NWFP product	Quantity harvested/collected	Total		
6. Ornamental plants	**Unit:**	**1990**	**2000**	**2005**
Decorative foliage [1)]	1 000 kg	300	300	300
Decorative lichens [2)]		174	171	217
Christmas trees [1)]		5000	5000	5000
Sum. 6. Ornamental plants		**5474**	**5471**	**5517**

Footnotes:

1) Rough estimates

2) Annual sales from largest export company, possibly underestimated. Data for 2004 used to represent year 2005.

NWFP products	Quantity harvested/collected	Total		
10. Hides and Skins	**Unit:**	**1990**	**2000**	**2005**
Moose *(Alces alces)* [1)]	pcs.	7000	7000	7000
Red fox *(Vulpes vulpes)* [2)]		16540	17320	17665
Mink *(Mustela vison)* [2)]		25560	6966	5453
Marten *(Martes martes)* [2)]		9820	4549	2992
Sum 10. Hides and skins		**58920**	**35835**	**33110**

Footnotes:

1) Rough estimates of hides utilised for further processing.

2) Assumed that skins are collected from total catch of animals.

NWFP products	Quantity harvested/collected	Total		
12. Bush meat	**1000 KG**	**1990**	**2000**	**2005**
Moose *(Alces alces)*		4120	5336	5404
Roe deer *(Capreolus capreolus)*		422	397	342
Red deer *(Cervus elaphus)*		647	1372	1512
Beaver *(Castor fiber)*		35	22	19
Mountain hare *(Lepus timidus)*		165	50	43
Capercaillie *(Tetrao urogallus)*		32	19	15
Black grouse *(Tetrao tetrix)*		39	23	21
Willow grouse *(Lagopus lagopus)*		156	147	133
Wood pigeon *(Columba palumbus)*		24	14	18
Ducks		69	41	43
Gooses		25	33	36
Sum 12. Bush meat		**5734**	**7454**	**7586**

Footnote: The value for 2003 has been used to represent 2005.

13.3 Analysis and processing of national data

13.3.1 Estimation and forecasting

Estimation has not been applied. Forecasting for year 2005 by means of linear extrapolation.

13.4 Reclassification into FRA 2005 classes

Not applied.

13.5 Data for National reporting table T13

FRA 2005 Categories	Scale factor	Unit	NWFP removal		
			1990	**2000**	**2005**
Plant products / raw material					
1. Food	1000	kg	26500	21500	19000
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	1000	kg	5474	5471	5517
7. Exudates					
8. Other plant products					
Animal products / raw material					
9. Living animals					
10. Hides, skins and trophies		pcs.	58920	35835	33110
11. Wild honey and bee-wax					
12. Bush meat	1000	kg	5734	7454	7586
13. Raw material for medicine					
14. Raw material for colorants					
15. Other edible animal products					
16. Other non-edible animal products					

13.6 Comments to National reporting table T13

Important species used for each non-wood product category:

Food:
Bilberry *(Vaccinium myrtillus)*
Cowberry *(Vaccinium vitis-idaea)*
Raspberry *(Rubus idaeus)*
Cloudberry *(Rubus chamaemorus)*
King Bolete *(Boletus edulis)*
Chanterelle *(Cantharellus cibarius)*

Ornamental plants:
Norway spruce *(Picea abies)*
Noble fir *(Abies procera)*
Subalpine fir *(Abies lasiocarpa)*
Nordmann fir *(Abies nordmanniana)*
Reindeer lichen *(Cladonia stellaris)*

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

References to sources of information	**Quality (H/M/L)**	**Variable(s)**	**Year(s)**	**Additional comments**
Norske Moseprodukter (export company for decorative lichens)	H	Price of decorative lichens	1990, 2000, 2004	

For other products, prices are based on "subjective assessments" and expert consultations.

14.2.2 Classification and definitions

National class	**Definition**
FRA 2005 categories applied	FRA 2005 definitions used

14.2.3 Original data

NWFP products	Value	Total		
1. Food	**Unit:**	**1990**	**2000**	**2005**
Wild berries	1 000 NOK	300000	240000	210000
Mushrooms		45000	45000	45000
Sum. 1. Food		**345000**	**285000**	**255000**

NWFP product	Value	Total		
6. Ornamental plants	**Unit:**	**1990**	**2000**	**2005**
Decorative foliage	1 000 NOK	3250	3250	3250
Decorative lichens		5750	5650	7190
Christmas trees		100000	100000	100000
Sum. 6. Ornamental plants		**109000**	**108900**	**110440**

NWFP products	Value	Total		
10. Hides and Skins	**Unit:**	**1990**	**2000**	**2005**
Moose *(Alces alces)*	1000 NOK	700	700	700
Red fox *(Vulpes vulpes)*		1654	1732	1767
Mink *(Mustela vison)*		3834	1045	818
Marten *(Martes martes)*		1473	682	449
Sum 10. Hides and skins		**7661**	**4159**	**3734**

NWFP products	Value	Total		
12. Bush meat	**1000 NOK**	**1990**	**2000**	**2005**
Moose *(Alces alces)*		308990	400201	405300
Roe deer *(Capreolus capreolus)*		42240	39744	34200
Red deer *(Cervus elaphus)*		48553	102929	113400
Beaver *(Castor fiber)*		3518	2219	1890
Mountain hare *(Lepus timidus)*		16464	5004	4260
Capercaillie *(Tetrao urogallus)*		4793	2786	2228
Black grouse *(Tetrao tetrix)*		5864	3465	3173
Willow grouse *(Lagopus lagopus)*		23353	22053	19976
Wood pigeon *(Columba palumbus)*		2439	1424	1752
Ducks		6894	4115	4283
Gooses		2500	3310	3625
Sum 12. Bush meat		**465608**	**587250**	**594087**

14.3 Analysis and processing of national data

Exchange rates (according to Appendix 4 in guidelines) used to convert into USD. Exchange rate for 1990 is 5.097, for 2000 is 8.849, for 2005 is 6.680 (=2003 exchange rate).

14.3.1 Estimation and forecasting

Estimation has not been applied. Forecasting for year 2005 has been carried out by multiplying the forecasted quantities by per unit values. Then the values in NOK have been converted into USD.

14.4 Reclassification into FRA 2005 classes

Not applied.

14.5 Data for National reporting table T14

FRA 2005 Categories	**Value of the of NWFP removed (1000 USD)**		
	1990	**2000**	**2005**
Plant products / raw material			
1. Food	58405	32207	38174
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	18453	12306	16533
7. Exudates			
8. Other plant products			
Animal products / raw material			
9. Living animals			
10. Hides, skins and trophies	1297	470	559
11. Wild honey and bee-wax			
12. Bush meat	78823	66363	88935
13. Raw material for medicine			
14. Raw material for colorants			
15. Other edible animal products			
16. Other non-edible animal products			
TOTAL	**156978**	**111346**	**144201**

15 Table T15 – Employment in forestry

15.1 FRA 2005 Categories and definitions

Category	Definition
Primary production of goods	Employment in activities related to primary production of goods, like industrial roundwood, woodfuel and non-wood forest products.
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

References to sources of information	Quality (H/M/L)	Variable(s)	Year(s)	Additional comments
Statistics Norway: Labour Force Sample Survey	M	Number of people employed in forestry	1990, 2000	

15.2.2 Classification and definitions

National class	Definition
Employment in forestry	Number of persons having “forestry” as their main occupation. Would include work in primary production carried out by forest owner, administrative and supervisory staff in forestry companies, contractors, but not activities like plant production in nurseries and collection of NWFP.

15.3 Analysis and processing of national data

15.3.1 Estimation and forecasting

Not applied.

15.4 Reclassification into FRA 2005 classes

Not applied.

15.5 Data for National reporting table T15

FRA 2005 Categories	Employment (1000 person-years)	
	1990	**2000**
Primary production of goods	n.d.a	n.d.a
Provision of services	n.d.a	n.d.a
Unspecified forestry activities	7.0	5.0
TOTAL	**7.0**	**5.0**

15.6 Comments to National reporting table T15

Data from Labour Force Sample Surveys are not distributed by category of staff or primary activities.