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**Forestry Statistics 2007** 

Official Statistics of Norway

This series consists mainly of primary statistics, statistics from statistical accounting systems and results of special censuses and surveys, for reference and documentation purposes. Presentation is basically in the form of tables, figures and necessary information about data, collection and processing methods, and concepts and defi-nitions. In addition, a short overview of the main results is given. The series also includes Statistical Yearbook of Norway

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Symbols in tables

### **Preface**

NOS Forestry Statistics is issued annually and contains a comprehensive survey on forestry statistics collected by Statistics Norway. Forestry Statistics 2007 contains statistics on forest resources, forest properties, silviculture, forest roads, production, forest owners, economy etc.

The main forestry statistics were previously published in "Today's statistics" and are available on the Internet: (http://www.ssb.no/skog).

In addition to tables in this publication it is also possible to obtain other or more detailed tables by applying directly to Statistics Norway. These tables can be transmitted electronically or by paper.

This publication has been prepared by Hanne Haanæs. Ole Osvald Moss, Head of Division for Primary Industry Statistics, is responsible for the publication.

Statistics Norway Oslo/Kongsvinger, 6 February 2009

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#### 1. Introduction

The purpose of this publication is, as far as possible, to present statistics on Norwegian forestry. The publication comprises the following main subjects:

- The National Forest Inventory
- Silviculture
- Forest roads
- Commercial roundwood removals
- Forest properties and forest owners

## 2. The National Forest Inventory

### 2.1. Introduction and history

The National Forest Inventory is a sample plot inventory aimed at providing data on natural resources and the environment for forest land in Norway. The Inventory is conducted by the Norwegian Forest and Landscape Institute. Inventory work was started in 1919, with the different inventory cycles taking place in the following years:

- 1: 1919-30
- 2: 1937-56
- 3: 1957-64
- 4: 1964-76
- 5: 1980-86
- 6: 1986-93
- 7: 1994-98
- 8: 2000-04
- 9: 2005-09

The entire country (except Finnmark county) was surveyed during the most recent period. Each inventory cycle covers the most important forest districts, while inventories in western and northern Norway have been carried out less frequently and are sometimes incomplete.

### 2.2. Users and applications

The most central users of the results from the National Forest Inventory are public administration at national and county level. The results serve as important input for the formation of forestry policies and control the effects of it.

In recent years, the demand for national forestry statistics has increased, and the National Forest Inventory is a central data source. Data from the inventories are used for example in research to develop descriptive models of forest dynamics.

The forest industry is an important user of the data. Among others thing, they need the data for strategic planning in the sawmill and pulp industry. The data are also used by educational institutions and by professionals in agriculture, forestry and environmental protection.

#### 2.3. Population and publishing

The statistics include all counties except Finnmark, however Finnmark will also be surveyed during the present five-year cycle.

The figures are published annually.

#### 2.4. Data sources and collection of data

The only data source is the National Forest Inventory's database. One of the main tasks of the National Forest Inventory is the assessment of timber resources. Data are collected so that the volume can be computed for different tree species, diameters and quality classes. Numbers of trees and annual increments are also calculated.

The National Forest Inventory's data collection is based on data from permanent sample plots. For the entire country except Finnmark, a systematic sample plot inventory in a bond by 3 x 3 kilometres is established. In the present inventory cycle, sample plots for Finnmark are also established. The plots are visited every five years and the survey forms the basis for statistics for the whole of Norway. In order to publish data by county, temporary plots are established in the counties when each county is appraised. Each county is appraised every fifteen years. An extensive number of attributes concerning forest conditions are recorded on the plots, some of which describe the area. Parameters that characterise level of development and species composition of the vegetation, certain aspects of biodiversity, utilisation and yield capacity of the land, forest treatment, conditions surrounding forest operations, etc., are measured or estimated. Inside a 250 square metre circle, every tree with a diameter of more than five centimetres in breast height (1.3 metres above ground level) is callipered.

### 2.5. Sampling

The sampling design has changed considerably over the years. The first two cycles were carried out as strip sampling inventories. A system of parallel strips was established throughout the area of interest, and measurements were taken within these strips. In the middle of the 1950s, the strip sampling was replaced by a systematic sample plot inventory, a method which has also been used subsequently. However, minor alterations concerning sampling design have been made several times.

An important difference between the period 1986-1993 and the previous inventory cycles was the introduction of permanent sample plots. A sub-sample of the established plots was marked in order to be able to re-measure the exact same area in future inventories. This was to provide greater possibilities for detecting changes in forest conditions. The permanent plots were re-measured during the period 1994-1998, according to a specific pattern. The inventory of one single year will provide representative results for the whole country.

Highly conspicuous markings are avoided in order to prevent the location of the plots from being too obvious to passers-by. The permanent plots should represent a random sample of the forests in Norway, and should not be treated any different than the rest of the forests. A total of approximately  $16\,000$  permanent sample plots have been established, of which about  $10\,500$  are located on productive forest and other wooded land below the coniferous forest limit. On average, the sampled area comprises about  $3\times10^{-5}$  of the surveyable area.

#### 2.6. Control and revision

Before each field season, training is held for the field crew. During the field season, the office staff visit the field workers at least once and some controls are carried out. In most cases, a control of the assessment is done. About 5 per cent of the sample plots are surveyed once more.

Corrections of the field instructions are made before every field season. A main revision is carried out every five years.

#### 2.7. Estimation

In order to estimate figures, for instance for a county, the area factor must be known. In a 3 x 3 kilometre net the area factor will be close to nine square kilometres or 900 hectares. Each sample plot will represent 900 hectares. For each tree measured, a volume with and without bark and the increment are estimated. Multiplying this with the area factor will establish how much each tree represents in this area. The volume for the growing stock in a county for instance can be found by summarising the volume of each measured tree in the county multiplied with the area factor.

### 2.8. Concepts, variables and classifications

Definitions of the main concepts and variables

*Growing stock*: total volume of the standing forest under bark. Comprises trees with a diameter of at least five centimetres at breast height (1.3 metres above ground level).

Annual increment: annual volume increment in standing forest inside bark.

Standard classifications

*Development class*: Describes the forest's development class from not regenerated forest to old forest.

In the current system the following definitions are used:

Development class I: forest under regeneration (non-stocked land and very sparsely stocked stands)

Development class II: regenerated areas and young forest

Development class III: young thinning stands Development class IV: advanced thinning stands

Development class V: mature forest

Site quality class: an expression of the area's capacity to produce wood when stocked with a tree species suitable for the local growing conditions. The site quality of the  $H_{40}$ -system is based upon the top height (the middle height of the hundred trees per hectare with the largest diameter) of the trees at the age of 40 years at breast height (1.3 metre above ground level).

### 2.9. Sources of error and uncertainty

Measurement and processing errors

Systematic errors are caused by errors or uncertainties in measurement, estimation and recording in the field, which are one-sided. Efforts are being made to reduce these errors as far as possible by training the field crews and checking their measurements. An example of errors of this type is the possibility of apparent area changes for productive forest land, which are really caused by different methods of judging the coniferous forest limit. The magnitude of systematic errors cannot normally be calculated.

Sampling errors

Random errors of the results are caused by the limited sample of the forest area and wood resources measured by the inventory, in addition to random errors of measurement. A measure for the random error is the so-called standard error, which is possible to calculate. The root mean square error (RMS error) depends on the number of sample plots and the variance of the parameter of interest, for instance volume of growing stock. If the observations are divided into more groups, the magnitude of the RMS error will be higher within each group.

#### 2.10. Comparability and coherence

The National Forest Inventory carried out the first assessment at county level in 1919.

Statistics Norway estimated the productive forest area from The Sample Survey of Agriculture and Forestry and The Census of Agriculture and Forestry 1979 and 1989.

#### 2.11. Main results

The volume of growing stock continues to increase. According to calculations from the National Forest Inventory the volume increased by 17 million cubic metres from 2006 to 2007. The total growing stock in Norwegian forests is now 765 million cubic metres.

For the second year in a row the increment decreased slightly, but the annual increment seems to have stabilized at about 25 million cubic metres. In 1933, the annual increment was 10 million cubic metres.

Spruce is the most common species of tree with 45 per cent of growing stock, followed by pine with 33 per cent and broad-leaved with 22 per cent. During the last decades the share of broad-leaved has increased and spruce decreased. In 1967, spruce amounted to 52 per cent and broad-leaved 17 per cent. The share of pine has been stable in the period. Spruce amounted to 54 per cent of the annual increment, while the corresponding figures for pine and broad-leaved was 24 and 22 per cent respectively.

Spruce was most common in the counties of Sør-Trøndelag and Nord-Trøndelag and represented 63 per cent of the volume of growing stock in these counties. In the well forested counties in the eastern part of Norway spruce also amounted to more than half of the volume. In the northern part of Norway, broad-leaved was most common with 62 per cent of the volume of growing stock. In the western parts of the country, the growing stock of spruce, pine and broad-leaved each amounted to approximately one third of the total volume. 15 years ago spruce only corresponded to one fourth of the volume.

For the first time figures on habitats for vulnerable and endangered species in forest are included in the survey. For the country as a whole, dead wood lying is the most common of these kind of habitats and was found on 12 per cent of the productive forest area. The region with the counties of Hedmark, Østfold, Oslo and Akershus had the lowest occurrence of dead wood lying with 6 per cent. The same regional tendency was found for several other habitats.

The productive forest area below the coniferous forest line, except of Finnmark county, is estimated to 74 148 square kilometres. In addition, 17 100 square kilometres is considered as unproductive forest area. The total area of wooded land is approximately 120 000 square kilometres.

#### 2.12. Availability

http://www.ssb.no/english/subjects/10/04/20/lst\_en/

More tables in StatBank

<u>06984: Registered incidence of different habitats in productive forest (per cent)</u> (2003-2007)

06286: Productive forest area, by development class (1957-1964 - 2003-2007)

06287: Productive forest area, by development class, site quality and surveyed regions (1996-2000 - 2003-2007)

06288: Productive forest area, except area under regeneration, by species of tree and surveyed regions (km²) (1996-2000 - 2003-2007)

06289: Growing stock inside bark and annual increment inside bark (1 000 m³) (1933 - 2007)

06290: Growing stock under bark, by type of land, species of tree and surveyed regions (1 000 m<sup>3</sup>) (1996-2000 - 2003-2007)

06291: Annual increment under bark, by type of land, species of tree and surveyed regions (1 000 m<sup>3</sup>), (1996-2000 - 2003-2007)

<u>06292: Total area, by type of vegetation and surveyed regions (km²)</u> (1996-2000 - 2000-2004)

Storage of microdata

Microdata are stored by The National Forest Inventory.

2.1. Growing stock inside bark and annual increment inside bark. The whole country. 1933-2007. 1 000 m<sup>3</sup>

		Growing	stock		Annual increment				
Year of inventory	Total	Spruce	Pine	Broad- leaved	Total	Spruce	Pine	Broad- leaved	
1933	322 635	170 960	90 002	61 673	10 447	5 835	2 535	2 077	
1967	435 121	226 168	133 972	74 981	13 200	7 131	3 364	2 706	
1986	543 234	261 359	177 771	104 104	18 579	9 951	4 838	3 790	
1987	552 414	263 992	180 634	107 788	18 958	10 103	4 935	3 920	
1988	561 004	266 383	183 014	111 607	19 321	10 249	5 018	4 054	
1989	569 664	268 497	185 642	115 525	19 688	10 388	5 109	4 191	
1990	578 317	270 543	188 279	119 495	20 058	10 528	5 200	4 330	
1991	588 476	273 333	191 540	123 603	20 485	10 703	5 310	4 473	
1992	599 243	276 788	194 806	127 649	20 921	10 892	5 411	4 618	
1993	609 399	279 968	197 904	131 526	21 337	11 070	5 498	4 769	
1994-1998	651 688	292 018	218 305	141 364	21 945	11 219	5 855	4 871	
1999	685 682	304 081	229 874	151 727	23 076	11 684	6 163	5 229	
2000	697 998	308 614	233 949	155 436	23 488	11 858	6 273	5 357	
2000-2004	720 789	323 213	238 137	159 439	25 540	13 709	6 151	5 680	
2001-2005	735 610	331 236	241 730	162 644	25 674	13 868	6 092	5 714	
2002-2006	747 945	336 201	244 622	167 122	25 526	13 746	6 010	5 769	
2003-2007	764 952	343 720	249 201	172 031	25 262	13 644	5 944	5 674	

Source: The Norwegian Forest and Landscape Institute. The National Forest Inventory and Statistics Norway, resource account for forestry.

#### 2.2. Total area, by type of vegetation and surveyed regions. km<sup>2</sup>

			Below the coniferous forest line							
Region	Year of inventory	Total	Total	Productive forest land	Unproductive forest		1	Other area <sup>1</sup>	Above the coniferous line <sup>1</sup>	
Surveyed regions, total Østfold, Akershus, Oslo and	2000-2004	275 122	150 969	74 148	17 099	6 032	7 652	46 037	124 153	
Hedmark	. 2000-2004	36 942	30 075	18 955	1 310	1 518	817	7 474	6 867	
Oppland, Buskerud and VestfoldTelemark, Aust-Agder and	. 2000-2004	42 334	24 004	14 413	2 078	737	891	5 885	18 330	
Vest-AgderRogaland, Hordaland, Sogn og Fjordane and Møre og	2000-2004 I	31 808	21 112	11 181	3 349	456	778	5 347	10 696	
Romsdal Sør-Trøndelag and Nord-	2000-2004	58 499	25 456	9 358	2 674	590	1 041	11 793	33 043	
Trøndelag	2000-2004	41 228	24 292	10 150	3 222	2 004	2 344	6 572	16 936	
Nordland and Troms Romsa	. 2000-2004	64 311	26 030	10 091	4 465	726	1 782	8 966	38 281	
Finnmark Finnmárku	2000-2004									

<sup>&</sup>lt;sup>1</sup> Including freshwater.

Source: The Norwegian Forest and Landscape Institute. The National Forest Inventory, 2000-2004.

#### 2.3. Productive forest area<sup>1</sup>, by development class. 1 000 hectares and per cent

Voor of inventory	Total ——		Develo	opment class						
Year of inventory	rotai ——	I	II	III	IV	V				
			1 000 hectares	s ————						
1951-1964	3 038	355	401	413	1 210	659				
1964-1976	3 101	218	809	405	950	719				
1982-1984	3 240	253	838	584	760	805				
1986-1992	3 286	171	766	678	707	964				
1994-1998	3 330	139	800	726	657	1 008				
1998-2002	3 370	124	815	728	667	1 036				
1999-2003	3 365	120	807	722	672	1 045				
2001-2005	3 362	94	803	727	685	1 053				
2002-2006	3 368	94	802	742	673	1 056				
2003-2007	3 378	93	793	741	679	1 072				
	Per cent —									
1951-1964	100	12	13	14	40	22				
1964-1976	100	7	26	13	31	23				
1982-1984	100	8	26	18	23	25				
1986-1992	100	5	23	21	22	29				
1994-1998	100	4	24	22	20	30				
1998-2002	100	4	24	21	20	31				
1999-2003	100	4	24	21	20	31				
2001-2005	100	3	24	22	20	31				
2002-2006	100	3	24	22	20	31				
2003-2007	100	3	23	22	20	32				

<sup>&</sup>lt;sup>1</sup> Refer to the counties Østfold, Akershus, Oslo, Hedmark, Oppland, Buskerud and Vestfold. These are the only counties that are included in all the inventory cycles presented.

Source: The Norwegian Forest and Landscape Institute. The National Forest Inventory, 2003-2007.

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### 2.4. Growing stock under bark, by type of land, species of tree and surveyed regions. 1 000 m<sup>3</sup>

Region	Year of	Total		Productive	forest land		Other types of land. Included Productive forest land in protected areas			
	inventory	Total	Total	Spruce	Pine	Broad- leaved	Total	Spruce	Pine	Broad- leaved
Surveyed regions, total	2003-2007	764 952	709 688	330 484	221 104	158 100	55 264	13 236	28 097	13 931
Østfold, Akershus, Oslo and Hedmark Oppland, Buskerud	2003-2007	212 381	203 309	105 048	73 496	24 765	9 072	2 445	5 169	1 458
and Vestfold Telemark, Aust-Agder	2003-2007 r	164 026	154 083	87 318	41 999	24 767	9 943	4 750	2 717	2 475
and Vest-Agder Rogaland, Hordaland Sogn og Fjordane and	,	137 128	123 676	42 326	52 519	28 832	13 452	2 650	8 312	2 489
Møre og Romsdal Sør-Trøndelag and	2003-2007	104 619	97 547	30 362	33 998	33 187	7 072	218	4 114	2 740
Nord-Trøndelag Nordland and Troms	2003-2007	91 566	81 327	51 312	14 404	15 612	10 239	2 716	5 896	1 627
Romsa Finnmark Finnmárku	2003-2007 2003-2007	55 230 	49 745 	14 119 	4 689 	30 937 	5 485 	456 	1 888 	3 141

Source: The Norwegian Forest and Landscape Institute. The National Forest Inventory, 2003-2007.

### 2.5. Annual increment under bark, by type of land, species of tree and surveyed regions. 1 000 m<sup>3</sup>

Region	Year of	Total -	Productive forest land				Other types of land. Included Productive forest land in protected areas			
region	inventory	Total -	Total	Spruce	Pine	Broadleav ed	Total	Spruce	Pine	Broad- leaved
Surveyed regions	<b>,</b>									
total	2003-2007	25 262	24 097	13 395	5 419	5 283	1 165	249	525	391
Østfold, Akershus,										
Oslo and Hedmark		7 718	7 519	4 427	2 086	1 006	199	47	108	44
Oppland, Buskerud										
and Vestfold	2003-2007	5 265	5 071	3 211	926	935	194	90	38	67
Telemark, Aust-Ag										
and Vest-Agder	2003-2007	4 249	3 987	1 800	1 231	956	262	49	145	68
Rogaland, Hordala										
Sogn og Fjordane										
Møre og Romsdal		3 733	3 544	1 746	751	1 047	189	10	91	88
Sør-Trøndelag and										
Nord-Trøndelag	2003-2007	2 649	2 459	1 594	305	559	190	45	106	39
Nordland and Tron	ns									
Romsa		1 647	1 517	618	119	780	130	9	37	84
Finnmark Finnmárl	ku 2003-2007									

Source: The Norwegian Forest and Landscape Institute. The National Forest Inventory, 2003-2007.

2.6. Registered incidence of different habitats<sup>1</sup> in productive forest, by region. Hectares and per cent

Region		Productive forest area in total	Standing I dead trees	Dead wood lying	Trees with nutrient- rich bark			Old trees	Rich ground vegetation
		-			Hec	tares ———			
Surveyed regions, total Østfold, Akershus, Oslo and	2003-2007	7 531 499	210 806	894 521	23 729	166 067	138 762	125 387	219 166
Hedmark Oppland, Buskerud and	2003-2007	1 948 229	26 818	117 974	639	33 719	19 518	24 383	18 665
Vestfold Telemark, Aust-Agder and	2003-2007	1 484 691	27 707	167 680	5 707	54 361	21 974	47 414	77 279
Vest-Agder	2003-2007	1 148 302	64 119	207 369	9 202	6 547	68 015	26 382	37 056
Romsdal Sør-Trøndelag and Nord-	2003-2007	965 013	39 774	125 324	2 503	13 488	13 342	7 520	40 552
Trøndelag Nordland and Troms Romsa Finnmark Finnmárku	2003-2007	1 046 384 1 031 516	30 899 21 489 	149 759 126 415 	1 844 3 834		7 941 7 972 	16 656 3 032 	29 903
Surveyed regions, total Østfold, Akershus, Oslo and	2003-2007	100.0	2.8	11.9	0.3	2.2	1.8	1.7	2.9
HedmarkOppland, Buskerud and	2003-2007	100.0	1.4	6.1	0.0	1.7	1.0	1.3	1.0
Vestfold Telemark, Aust-Agder and	2003-2007	100.0	1.9	11.3	0.4	3.7	1.5	3.2	5.2
Vest-Agder Rogaland, Hordaland, Sogn og Fjordane and Møre og	2003-2007	100.0	5.6	18.1	0.8	0.6	5.9	2.3	3.2
Romsdal	2003-2007	100.0	4.1	13.0	0.3	1.4	1.4	0.8	4.2
Trøndelag Nordland and Troms Romsa Finnmark Finnmárku	2003-2007	100.0 100.0 	3.0 2.1 	14.3 12.3	0.2 0.4 		0.8 0.8	1.6 0.3 	2.9

<sup>&</sup>lt;sup>1</sup> Corresponds to the registration of habitats for vulnerable and endangered species (red listed species) in a forest resource assessment. Two or more habitats may be registered within the same area.

Source: The Norwegian Forest and Landscape Institute. The National Forest Inventory, 2003-2007.

### 3. Silviculture

### 3.1. Introduction and history

The purpose of the statistics is to provide information at county level on silviculture and forest drainage.

The structure of the forest administration prescribed in the Forestry Act of 1932 provided a platform for collecting statistical data on silviculture work etc. approved by the Forest Service and was thereby entitled to receive subsidies. Silviculture statistics begin with the fiscal year 1935/36. Prior to that, the Ministry of Agriculture compiled statistics on silviculture, ditch cleaning and fertilizing of forests. The completed figures have been published by Statistics Norway. Statistics on new ditches for forest drainage have previously been compiled entirely by Statistics Norway on the basis of data from the Ministry of Agriculture and Food. Statistics Norway has compiled all silviculture statistics since 1997.

### 3.2. Users and applications

The statistics are used by public agencies (Ministries, county authorities), forest owners' organisations and research institutes. Results from the silviculture statistics are included in the Aggregate Account for Forestry, which is compiled by Statistics Norway.

### 3.3. Population and publishing

The statistics only cover activities financed wholly or partly by the Forest Trust Fund and/or by government subsidies.

The Forest Trust Fund is a legalised fund where the forest owners set apart a certain amount of the gross value of their roundwood sold. Money from the fund can be used by the owner for forest investments, such as planting, clearing, drainage etc.

The figures are published annually.

#### 3.4. Data sources and collection of data

The silviculture statistics are based on information from the Norwegian Agricultural Authority (SLF) and their database on the Forest Trust Fund (SKAS).

The Forest Service in each municipality keeps the Forest Trust Fund Account. The account is reported to the County Department of Agricultural Affairs (FMLA). The Norwegian Agricultural Authority obtains data from the databases and organises them in files forwarded to Statistics Norway.

#### 3.5. Control and revision

If the data are unclear, the Norwegian Agricultural Authority or County Department of Agricultural Affairs is contacted so that any errors can be corrected.

#### 3.6. Estimation

The statistics are published at county level.

#### 3.7. Concepts, variables and classifications

Definitions of the main concepts and variables

*Number of plants planted*: total number of plants planted. Cover both forest regeneration and supplementary planting.

*Planting cost, total*: total cost of plants and planting. Covers both forest regeneration and supplementary planting.

Tending of young stands: tending of young forest stands until first thinning.

*Scarification*: spot removal of vegetation in order to improve the conditions for natural regeneration and the growth of forest plants.

Forest area planted or seeded: forest area planted or seeded for forest production. Does not include supplementary planting.

*Productive forest area*: forest area that under favourable stand conditions has an annual yield capacity per hectare of at least 1 cubic metre of wood including bark.

### 3.8. Sources of error and uncertainty

Measurement and processing errors

In some cases, the reported areas in the Forest Accounts are estimated. Adaptations to the subsidies system can also occur.

### 3.9. Comparability and coherence

Comparability over time and space

During the period 1935/36 - 1949/50, the statistics apply to the fiscal year. In 1951, the calendar year was adopted, but the data for this year were combined with the data for the second half of 1950. The transition data from fiscal year to calendar year consequently cover 1½ years. The 1998 figures for Finnmark and 1999 figures for Troms are missing.

Coherence with other statistics

Results from the Silviculture statistics may be compared with some of the results from the Sample Survey of Agriculture and Forestry. The Sample Survey of Agriculture and Forestry are available via the following link: http://www.ssb.no/english/subjects/10/04/20/skogbruk en/

#### 3.10. Main results

Since the low in 2005, there has been an increase in forest planting. In 2007, a total of 13 000 hectares were planted, an increase of 9 per cent from the previous year.

In 2007, a total of 21 million plants were planted. Hedmark county had the highest planting activity, with 3 100 hectares of forest land planted. The average planting expenditure was NOK 69 per hectare forest land.

This work consists of clearing, weed combating and juvenile spacing – activities that are necessary in connection with the establishment of new forest. The area tended in 2007 increased by 8 200 hectares compared with 2006. A total of 30 000 hectares were tended in 2007.

Scarification involves the removal of vegetation in spots to improve the conditions for natural regeneration and growth of forest plants. Scarification was performed on 5 800 hectares in 2007, which is a decrease of 540 hectares from 2006.

There has been a sharp decline in drainage of bogs and woodland in recent years. This is mainly due to greater environmental awareness and reduced profitability. In 2007, only 5 hectares were drained. The decrease in drainage works in 2007 coincides with the disappearance of public subsidies for these activities.

In total, 620 hectares were sprayed in 2007, which is 140 hectares more than in 2006.

### 3.11. Availability

http://www.ssb.no/english/subjects/10/04/20/skogkultur\_en/

More tables in StatBank

05543: Fertilizing of forest (C) (1997 - 2007)

03679: Scarification. Area and expenditure (C) (1997 - 2007)

06108: Expenditure and public subsidies on silviculture (NOK 1 000). (C) (2005 - 2007)

03677: Forest drainage. Area drained and length of ditches (C) (1997 - 2007)

05578: Forest drainage, by expenditure and subsidies (NOK 1 000). (C) (1995 -

2007)

05542: Chemical cleaning and weed combating (C) (1995 - 2007)

03522: Forest planting (C) (1982 - 2007)

05544: Young forest tending (C) (1995 - 2007)

03523: Clearing and weed combating (C). The Table is closed (1982 - 2003)

Storage of microdata

Microdata are stored in Statistics Norway.

#### 3.1. Forest regeneration<sup>1</sup>, by county

Year County		Planting	
Teal County	Area	Number of plants <sup>2</sup>	Expenditure <sup>2</sup>
	Decares	1 000 pieces	NOK 1 000
1991	290 863	62 075	174 586
1992	281 107	57 874	161 989
1993	226 831	47 174	140 077
1994	203 562	44 653	131 578
1995	227 437	46 839	145 771
1996	218 109	45 530	145 129
1997	205 074	39 970	135 891
1998 <sup>3</sup>	205 019	42 561	151 219
1999	190 369	37 940	142 704
2000	187 796	37 392	145 016
2001	182 521	34 966	139 905
	158 232	29 031	120 006
2002			
2003	109 332	18 759	77 512
2004	114 535	18 417	77 169
2005	103 468	16 818	72 909
2006	119 390	19 192	84 599
2007	129 954	20 687	92 422
2007			
County			
Østfold	5 089	951	4 513
Akershus and Oslo	6 192	1 143	5 023
Hedmark	30 737	5 087	19 529
Oppland	23 224	3 551	15 476
Buskerud	9 906	1 570	7 596
Vestfold	4 905	725	3 732
Telemark	7 828	985	5 240
Aust-Agder	2 990	475	2 397
Vest-Agder	1 691	290	1 566
Rogaland	977	229	1 219
Hordaland	584	129	645
Sogn og Fjordane	799	213	1 011
Møre og Romsdal	1 783	387	1 903
	9 452	1 469	6 570
Sør-Trøndelag	9 452 17 861	2 589	11 415
Nord-Trøndelag			
Nordland	5 242	723	3 616
Troms Romsa	694	171	971
Finnmark Finnmárku	-	-	-

<sup>&</sup>lt;sup>1</sup> The figures only comprise work financed with forest trust fund or government subsidies. <sup>2</sup> Includes supplementary planting. <sup>3</sup> Figures for Finnmark are missing. Source: Silviculture, Statistics Norway.

#### 3.2. Forest drainage<sup>1,2</sup>. 1991-2007

						Of wich		
Year	Ditches	Total	Woodland	Nutritious gradual flow bogs	Other gradual flow bogs	Ombrogen- ous bogs	Expenditure	government subsidies
	km –			— Decare —			NOK	1 000 ———
1991	1 716	29 920	25 177	2 704	1 853	186	12 147	4 596
1992	1 233	22 441	18 513	2 550	1 334	44	9 313	3 608
1993	908	16 969	13 776	2 030	1 061	102	6 664	2 389
1994	683	12 969	11 706	350	884	29	5 046	1 642
1995	413	7 978	7 370	323	285	-	3 281	936
1996	339	7 774	7 139	328	307	-	2 556	649
1997	269	4 464	4 069	115	256	24	2 056	543
1998 <sup>3</sup>	320	7 044	6 347	314	297	86	2 419	775
1999	312	5 666	5 116	150	386	14	2 497	687
2000	213	3 856	3 551	17	288	-	1 724	503
2001	176	4 149	4 055	21	73	-	1 491	394
2002	160	3 903	3 770	-	133	-	1 424	343
2003	36	943	901	30	12	-	343	-
2004	55	2 861	2 804	29	28	-	554	125
2005	64	1 627	1 575	4	48	-	607	203
2006	77	2 197	2 176	20	1	-	711	251
2007	3	51	45	6	-	-	20	14

<sup>&</sup>lt;sup>1</sup> The figures only comprise work financed with forest trust fund or government subsidies. <sup>2</sup> New ditches. <sup>3</sup> Figures for Finnmark are missing. Source: Silviculture, Statistics Norway.

#### 3.3. Silviculture<sup>1</sup>, by county

Year County	Area	Expenditure
	Decares	NOK 1 000
2002	308 973	77 219
2003	112 259	28 679
2004	259 699	68 879
2005	282 535	78 652
2006	217 653	63 938
2007	299 824	94 166
2007		
County		
Østfold	18 942	6 181
Akershus and Oslo	23 990	7 031
Hedmark	84 901	27 079
Oppland	23 204	7 565
Buskerud	33 221	11 433
Vestfold	17 033	5 449
Telemark	22 184	6 426
Aust-Agder	19 512	5 751
Vest-Agder	10 342	3 258
Rogaland	1 630	627
Hordaland	1 101	761
Sogn og Fjordane	319	134
Møre og Romsdal	5 741	1 920
Sør-Trøndelag	7 660	2 289
Nord-Trøndelag	23 072	6 095
Nordland	5 132	1 490
Troms Romsa	1 840	677
Finnmark Finnmárku		<u> </u>

<sup>&</sup>lt;sup>1</sup> The figures only comprise work financed with forest trust fund or government subsidies. Source: Silviculture, Statistics Norway.

#### 3.4. Scarification<sup>1</sup>. Area and expenditure, by county

Year County	Areal	Expenditure
	Decares	NOK 1 000
1999	80 494	13 627
2000	78 708	13 925
2001	69 132	13 170
2002	83 263	15 409
2003	47 281	7 664
2004	57 733	10 628
2005	49 637	9 359
2006	63 270	11 937
2007	57 877	12 184
2007		
County		
Østfold	141	43
Akershus and Oslo	1 242	239
Hedmark	27 527	4 946
Oppland	7 819	1 602
Buskerud	5 915	1 406
Vestfold	189	37
Telemark	1 486	406
Aust-Agder	2 059	504
Vest-Agder	2 166	582
Rogaland		-
Hordaland	87	17
Sogn og Fjordane	<u>.</u>	···
Møre og Romsdal	2 110	678
Sør-Trøndelag	4 984	1 183
Nord-Trøndelag	2 055	519
Nordland	97	24
Troms Romsa	-	-
Finnmark Finnmárku	<u>-</u>	_
I IIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIII	<u>-</u>	<u>-</u>

<sup>&</sup>lt;sup>1</sup> The figures only comprise work financed with forest trust fund or government subsidies. Source: Silviculture, Statistics Norway.

#### 3.5. Expenditure and public subsidies on silviculture<sup>1</sup>, by county. NOK 1 000

Year County	Total amount	Of which public subsidies
2001	252 541	87 151
2002	231 397	64 836
2003	123 624	1 382
2004	166 776	28 059
2005	172 116	33 581
2006	170 339	43 159
2007	215 460	52 480
2007		
County		
Østfold	12 261	2 549
Akershus and Oslo	13 218	1 980
Hedmark	57 858	7 436
Oppland	25 418	3 476
Buskerud	21 369	3 799
Vestfold	10 580	2 888
Telemark	12 554	3 805
Aust-Agder	8 933	3 164
Vest-Agder	5 824	2 689
Rogaland	3 746	1 942
Hordaland	1 631	1 110
Sogn og Fjordane	1 312	785
Møre og Romsdal	4 816	2 960
Sør-Trøndelag	10 241	3 603
Nord-Trøndelag	18 532	6 611
Nordland	5 277	2 351
Troms Romsa	1 892	1 332
Finnmark Finnmárku	-	-

<sup>&</sup>lt;sup>1</sup> The figures only comprise work financed with forest trust fund or government subsidies. Source: Silviculture, Statistics Norway.

### 4. Forest roads for motor vehicles

### 4.1. Introduction and history

The purpose of the statistics is to provide information at county level on the construction of forest roads. Statistics extend back to the working year 1932/33.

### 4.2. Users and applications

The statistics are used by public agencies (Ministries, county authorities), forest owners' organisations and research institutes. In recent years there has been increasing interest from environmental organisations.

Results from the forest roads statistics are included in the Aggregate Account for Forestry, which is compiled by Statistics Norway. The figures are also used annually in the publication Natural Resources and the Environment.

### 4.3. Population and publishing

In principle, the statistics cover all private forest roads for motor vehicles. Data on roads built without public subsidies are however somewhat incomplete.

The data cover roads that are finished and approved during the report year.

The figures are published annually.

#### 4.4. Data sources and collection of data

Data on roads built with subsidies or public loans come from the Forest Trust Fund (SKAS) database.

The County Department of Agricultural Affairs keeps data on roads built without subsidies or loans manually.

The statistical data on newly built and rebuilt forest roads are collected by the Forest Trust Fund (SKAS). The Norwegian Agricultural Authority extracts data from the Forest Trust Fund database and forwards them to Statistics Norway. The County Department of Agricultural Affairs reports roads built without subsidies or loans to Statistics Norway.

### 4.5. Sampling

Total census.

#### 4.6. Control and revision

If the data are unclear, the Ministry of Agriculture and Food or the County Department of Agricultural Affairs is contacted so that any errors can be corrected. After compilation, the statistics are sent to the Ministry of Agriculture and Food for additional inspection.

#### 4.7. Estimation

Number of roads, length and expenditure are summarised and distributed by county and country.

## 4.8. Concepts, variables and classifications

Definitions of the main concepts and variables

Forest roads are divided into two groups, (i) whole-year roads, summer roads and (ii) winter roads for lorries and roads for tractors.

In accordance with the Ministry of Agriculture and Food's classification of road standards, *whole-year roads and summer roads* are included in road classes 2-5:

- Road class 2, main road/branch road
- Road class 3, whole-year agriculture road
- Road class 4, summer motor road (for timber lorries with trailer)
- Road class 5, summer motor road (for timber lorries without trailer)

Road classes 2 and 3 are roads with a carrying capacity and gradient for year-round use for timber lorries with a trailer. Road classes 4 and 5 have the same carrying capacity, but these roads have a higher gradient and are therefore approved only for summer use.

Winter roads and tractor roads are included in road classes 6-8:

- Road class 6, winter motor road
- Road class 7, heavy tractor road
- Road class 8, light tractor road

Timber lorries can only use road class 6 when the ground is frozen or covered with snow. Load carriers and tractors can use road class 7 all year round except in the spring when the frozen ground melts. Road class 8 is built with a lower demand for breadth, carrying capacity and gradient than road class 7.

The roads standards are further described at the following website: <a href="http://www.skogkurs.no/vegnormaler/index.html">http://www.skogkurs.no/vegnormaler/index.html</a>

### 4.9. Sources of error and uncertainty

Measurement and processing errors

In some cases, forest roads built with public subsidies can be given retrospective approval. Adaptations to the subsidies system may also be made.

Non-response errors

Data on roads built with subsidies are assumed to be complete. Data on roads built without subsidies may not be complete because not all road projects are reported. The data collected on the building of forest roads are therefore regarded as minimum figures.

#### 4.10. Comparability and coherence

Comparability over time and space

Initially, when the work on the statistics commenced, it was difficult to break down the data for each year. The overview of forest motor roads built before 1 July 1950 is therefore a summary of all forest roads built from the working year 1932/33 to 1 July 1950.

Coherence with other statistics

The total road area is published on the website: http://www.ssb.no/english/subjects/01/01/

#### 4.11. Main results

A total of 58 kilometres of new all-year roads for lorries were completed and 196 kilometres were rebuilt in 2007. Since the beginning of the 1990s, there has almost yearly been a decline in new construction and reconstruction of forest roads.

Sogn og Fjordane and Hordaland counties had most new forest roads in 2007, with the completion of 10 and 9 kilometres respectively.

Total costs for the construction and reconstruction of forest roads amounted to NOK 84 million in 2007, of which government subsidies accounted for NOK 26 million. The average expenditure was NOK 247 per metre of all-year roads and summer roads and NOK 75 per metre of winter roads and tractor roads.

Winter and tractor roads are built to a lower standard than all-year roads and summer roads. In total, 209 kilometres of new winter and tractor roads were built and 79 kilometres were rebuilt in 2007.

Although there is little construction of new forest roads, the total length of such roads in Norway is extensive. 48 400 kilometres of forest roads for lorries were registered at the end of 2006. In comparison, the total length of public roads in Norway is 93 000 kilometres.

### 4.12. Availability

http://www.ssb.no/english/subjects/10/04/20/skogsvei\_en/

More tables in StatBank

06057: Whole-year roads for lorries. Total road length (km). (C) (2006)

03771: Forest roads constructed and rebuilt. Expenditure (NOK 1 000). (C) (1999 - 2007)

<u>05498</u>: Forest roads constructed and rebuilt. Average expenditure (NOK 1 000). (C) (2004 - 2007)

<u>03772</u>: Forest roads constructed and rebuilt. Whole-year roads and summer roads for lorries (C) (1999 - 2007)

<u>05496: Forest roads constructed and rebuilt. Expenditure (NOK 1 000). (C) (2004 - 2007)</u>

<u>03773</u>: Forest roads constructed and rebuilt. Winter roads for lorries and roads for tractors (C) (1999 - 2007)

Storage of microdata

Microdata are stored in Statistics Norway.

#### 4.1. Forest roads constructed and rebuilt. Number of roads and length, by county

	Whole-year ro	ads and summer r	oads for lorries	Winter roads for lorries and roads for tractors		
Year County	Number of roads	Length of roads newly completed	Length of roads rebuilt		Length of roads newly completed	Length of roads rebuilt
		k	m ———		k	m ———
1991	1 132	768	683	2 936	1 861	61
1992	1 252	780	766	3 010	1 899	53
1993		523	641	1 934	1 328	50
1994		482	532	1 526	987	30
1995		376	436	1 466	903	43
1996		303	327	1 410	832	18
1997		284	359	1 361	745	79
1998		290	503	1 332	707	30
1999		218	432	925	575	29
2000		166	436	1 025	614	30
2001		176	434	761	470	25
2002		189	500	989	605	59
2003		130	410	703	382	63
2004		93	300	681	305	77
2005		56	202	525	230	63
2006		68	202	504	234	55
2007		58	196	553	209	79
2007						
County						
Østfold	7	_	4	1	0	_
Akershus and Oslo	· · · · · · · · · · · · · · · · · · ·	1	3	7	1	2
Hedmark		0	31	31	19	2
Oppland		3	25	51	19	7
Buskerud		5	25	26	10	. 7
Vestfold		1	7	11	4	1
Telemark		7	62	190	47	40
Aust-Agder		7	11	34	13	2
Vest-Agder		2	3	60	16	4
Rogaland		1	1	19	7	0
Hordaland		9	4	9	4	0
Sogn og Fjordane		10	4	21	10	1
Møre og Romsdal		0	1	14	5	0
		7	0	23	10	U
Sør-Trøndelag		4	12	20	9	- 12
Nord-Trøndelag		4	2	18	19	0
Nordland		2	0		19	1
Troms RomsaFinnmark Finnmarku		-	-	18	-	1 -
Way of financing						
With public subsidies	194	46	144	103	69	21
Without public subsidies		12	52	450	141	58
MILLIOUT PUDITO SUDSIDIES	120	12	32	430	141	36

Source: Forest roads for motor vehicles, Statistics Norway.

Official Statistics of Norway Forestry Statistics 2007

### 4.2. Forest roads constructed and rebuilt. Expenditure, by county. NOK 1 000

Year County	Total	Whole-year roads and summer roads for lorries	Winter roads for lorries and roads for tractors	Public subsidies
1991	300 650	211 986	88 664	96 449
1992	322 932	223 232	99 700	109 704
1993	245 728	172 139	73 589	84 730
1994	214 010	156 682	57 327	79 256
1995	185 625	124 262	61 363	65 078
1996	170 399	118 041	52 358	65 681
1997	152 178	106 546	45 632	54 580
1998	178 121	133 945	44 176	67 832
1999	164 339	119 142	45 197	61 213
2000	164 211	116 028	48 183	63 553
2001	148 192	113 247	34 945	54 757
2002	184 954	136 911	48 043	68 685
2003	149 296	110 111	39 185	55 360
2004	123 044	90 584	32 460	43 178
2005	96 863	66 582	30 281	29 220
2006	84 599	58 969	25 631	29 574
2007	84 146	62 587	21 558	26 232
2007				
County				
Østfold	1 535	1 515	20	460
Akershus and Oslo	1 287	1 050	237	174
Hedmark	4 771	3 786	985	1 294
Oppland	6 237	4 867	1 370	1 651
Buskerud	5 544	4 481	1 063	553
Vestfold	2 166	1 663	504	518
Telemark	15 373	11 809	3 563	3 371
Aust-Agder	8 620	7 390	1 229	2 586
Vest-Agder	3 782	1 419	2 363	679
Rogaland	1 322	495	827	295
Hordaland	7 197	6 538	658	4 035
Sogn og Fjordane	9 526	7 352	2 174	3 260
Møre og Romsdal	1 420	473	946	493
Sør-Trøndelag	3 911	3 167	744	1 252
Nord-Trøndelag	7 176	5 985	1 192	3 020
Nordland	1 882	200	1 682	1 059
Troms Romsa	2 397	397	1 999	1 530
Finnmark Finnmárku	-	-	-	-
Way of financing				
With public subsidies	66 608	55 328	11 280	26 232
Without public subsidies	17 538	7 260	10 278	
Source: Forest roads for motor vehicles. Statis				

Source: Forest roads for motor vehicles, Statistics Norway.

#### 4.3. Average expenditure for forest road constructions<sup>1</sup>. 1990-2007. NOK per metre

	Whole-year road	s and summer ro	ads for lorries	Winter roads for	Winter roads for lorries and roads for tractors			
Year	All	With public subsidies	Without public subsidies	All	With public subsidies	Without public subsidies		
1990	133	144	54	45	56	24		
1991	146	152	65	46	59	25		
1992	144	150	55	51	62	26		
1993	148	152	69	54	68	24		
1994	155	162	54	56	68	27		
1995	153	166	57	65	78	36		
1996	187	202	72	62	80	30		
1997	166	173	81	55	70	31		
1998	169	179	57	60	39	34		
1999	400	189	94	75	92	36		
2000	400	205	67	75	96	35		
2001	186	197	96	71	90	44		
2002	199	208	95	72	86	47		
2003	204	217	98	88	114	50		
2004	230	257	86	113	54	85		
2005		263	199	103	119	91		
2006		218	106	89	129	54		
2007	247	292	113	75	126	52		

<sup>&</sup>lt;sup>1</sup>Comprise new constructions and roads rebuilt.

Source: Forest roads for motor vehicles, Statistics Norway.

#### Whole-year roads and summer roads for lorries. Total road length. km 4.4.

County	Length
2006 <sup>1</sup>	48 406
County	
Østfold	1 636
Akershus and Oslo	2 918
Hedmark	11 612
Oppland	6 951
Buskerud	6 144
Vestfold	1 241
Telemark	4 905
Aust-Agder	2 418
Vest-Agder	654
Rogaland	305
Hordaland	837
Sogn og Fjordane	572
Møre og Romsdal	1 075
Sør-Trøndelag	2 284
Nord-Trøndelag	3 420
Nordland	300
Troms Romsa	944
Finnmark Finnmárku	190
1	

<sup>1</sup> At 1 January 2006. Source: The Norwegian Mapping Authority.

#### 5. Commercial roundwood removals

### 5.1. Introduction and history

The purpose of the statistics is to provide detailed information at municipal level on commercial roundwood removals.

The statistics date back to 1918/19, but annual figures at municipal level are available from the working year 1936/37. At that time, statistics only covered quantity cut distributed by industrial wood and wood fuel of coniferous and broad leaved species.

Since then the following changes have been made:

- Buyer group was included from the working year 1962/63
- Gross value was included from the working year 1965/66
- The division of the assortments has varied over the course of time. The division used today was introduced in the working year 1970/71.
- Seller group was included from the working year 1980/81
- From 1996 the statistics follow the calendar year
- From 2006 the statistics do not include figures on wood fuel
- From 2006 average roundwood prices per cubic metre are provided

### 5.2. Users and applications

The statistics are used by public authorities, research and educational institutions, professional and industrial bodies, international organisations etc. The results are also used in the Aggregate account of forestry prepared by Statistics Norway.

### 5.3. Population and publishing

The statistics cover all industrial roundwood for sale. The wood registered is net removals excluding rot, unusable tops, etc. The quantity cut is given in cubic metres of solid wood inside bark by assortments, seller groups and buyer groups.

Until 1995/96, the statistics followed the working year (1 August-31 July). Since 1996, the figures have referred to calendar years.

Figures on wood fuel have not been included since 2006.

The figures are published annually.

#### 5.4. Data sources and collection of data

Until 31 December 1995, quantities cut for sale from private forests and municipal forests were reported by the municipal forest administration, and wood from common forests and State forests by their respective management. The reports were collected by the forest administration in each county and forwarded to Statistics Norway.

Since January 1996, the figures on industrial wood have been provided by the Ministry of Agriculture and Food through the Register of Timber Trade and Diverted Forest Trust Fund. The firm Skog-Data AS manages the register. The data in the register comes from the scaling of the timber sold.

The figures on wood fuel have not been included since 2006. Before 2006, figures on wood fuel were estimated by the County Department of Agricultural Affairs.

Because of the changeover from one data source to another on 1 January 1996, the statistics for the working year 1995/96 are based on both the reports by the municipal forest administration and the Register of Timber Trade and Diverted

Forest Trust Fund. Data for removals in the period 1 August to 31 December 1995 were reported on paper forms from the municipal forest administration and the management of common and State forests. Data for removals in the period 1 January to 31 July 1996 were collected electronically from Skog-Data AS. Since 1996, the data have been based on all scaled quantities of roundwood reported to Skog-Data AS. Quantities sold as stumpage are registered when the sales contract is signed.

### 5.5. Sampling

All quantities of roundwood cut for sale during a calendar year are scaled and reported to Skog-Data AS.

#### 5.6. Control and revision

The data are checked in Statistics Norway with the focus on likely buyer group and likely price level for each assortment. Missing information is collected from the County Department of Agricultural Affairs. Corrections and additional payments that refer to another year are removed, if discovered.

#### 5.7. Estimation

Roundwood quantity and gross margin are summarised per municipality, assortment, buyer and seller group. The average price per assortment is then estimated.

### 5.8. Confidentiality

Any statistics based on three respondents or less are not published.

### 5.9. Concepts, variables and classifications

Definitions of the main concepts and variables

*Gross value of industrial roundwood* is the value of the wood at the place of delivery to the buyer (road, factory yard, etc.).

Industrial roundwood is all roundwood removal except wood fuel.

Assortments

*Special timber* includes poles, veneer logs, saw logs of veneer quality, and other timber of special high quality.

First class saw logs refer to saw logs classified as first class according to measurement regulations.

Second class saw logs refer to saw logs classified as second class according to measurement regulations.

Other saw logs comprise ordinary top-scaled and mid-scaled saw logs and other logs suitable for sawing, not measured in quality classes.

*Unsorted saw logs and pulpwood* comprise timber measured in tree length, wood sold as stumpage and other unsorted roundwood containing both saw logs and pulpwood.

*Pulpwood* comprises roundwood generally used in the pulp industries and the fibreboard and particle board industries. Top-scaled timber (timber suitable for sawing) used in these industries is not included.

*Other roundwood* comprises roundwood used for manufacture of cases and casks, pitprops and mining timber, pilings, fence wood, posts etc.

Wood fuel refers to roundwood sold for fuel.

Official Statistics of Norway

Buyer groups

Sawmills and wood industries comprise sawmills, manufacture of cases and casks, and prefabrication of wooden houses and wooden structures.

Pulp industries include the manufacture of mechanical and chemical pulp.

Fibre and particle board industries comprise wallboard and particle board production only.

Other Norwegian buyers comprise wood preserving industries, the manufacture of wood furniture and fixtures, charcoal, wood flour, wood wool, veneer and flooring, matches, ship and boat-building as well as all other buyers not included in other groups. Until 1998, wood for export was included.

*Foreign buyers* include sawmills, industry or other buyers outside Norway. These buyers were included in "Other buyers" until 1998.

Standard classifications

<u>Classification of forest owners with at least 25 decares of productive forest area by</u> owner group

Classification of buyers and sellers of industrial roundwood

Tree species and assortment used by commercial roundwood removals

### 5.10. Sources of error and uncertainty

Measurement and processing errors

The statistics on industrial wood removals are thought to be quite accurate at county level. Sources of errors are corrections and additional payments registered with insufficient information.

The quantities given in the assortment "Unsorted saw logs and pulpwood" are probably too high. This is due to the fact that some of the roundwood removals are reported on paper forms where assortments are not specified. These removals are all registered as "Unsorted saw logs and pulpwood". Wood sold as stumpage is included in "Unsorted saw logs and pulpwood". Wood sold as stumpage may be harvested another year than it is sold. Since 1996, the gross value of this wood has excluded costs for cutting and hauling. These two circumstances explain the varying average prices for this assortment.

#### 5.11. Comparability and coherence

Comparability over time and space Coherence with other

statistics

The breaks in the time series are explained in chapter 5.1.

Final results are almost equal to preliminary results at county level and country level, but can differ considerably at municipal level.

#### 5.12. Main results

The average timber price in current prices has never been higher than in 2007. For the country as a whole the timber price was NOK 375 per cubic metre. A total of 8.2 million cubic metres of timber was cut for sale.

In 2006, a total of 7.3 million cubic metres was cut for sale and the average timber price was NOK 318 per cubic metre.

The aggregated gross value of roundwood sold to the manufacturing industry in 2007 amounted to NOK 3.2 billion. In 2006, the corresponding figure was NOK 2.3 billion.

Final figures at municipality level are published in Statbank.

#### 5.13. Availability

Final results

http://www.ssb.no/english/subjects/10/04/20/skogav\_en/

More tables in Today's statistics

<u>Table 1 Commercial roundwood removals. Year and 4th quarter 2007 and 2008.</u> 1 000 m<sup>3</sup>

Table 2 Commercial rundwood removals, by assortment group. 1 000 m<sup>3</sup>
Table 3 Commercial roundwood removals by county. Year and 4th quarter 2007-2008. 1000 m<sup>3</sup>

More tables in StatBank

03908: Commercial removals of industrial roundwood, by species of tree and buyer group (m³). (M) (1998 - 2007)

<u>06395</u>: Commercial removals of industrial roundwood, by species of tree and buyer group (m³). (M) (1996 - 1997)

03895: Commercial removals of industrial roundwood, by assortment (m³). (M) (1996 - 2007)

<u>04801: Commercial removals of industrial roundwood, by species of tree and buyer</u> group (1 000 m³). Preliminary figures (2004 - 2005)

06344: Commercial roundwood removals, by assortment group (1 000 m³). Preliminary figures (2006 - 2008)

<u>06363</u>: Average prices on industrial roundwood, by assortment (NOK per m³). Preliminary figures (2006 - 2008)

<u>06345: Commercial roundwood removals (1 000 m³). Preliminary figures</u> (2006 - 2008)

06346: Average prices on industrial roundwood, by assortment. (NOK per m³) Preliminary figures (2006M01 - 2008M12)

06347: Commercial roundwood removals (1 000 m³). Preliminary figures. (C) (2006 - 2008)

06350: Commercial removals of industrial roundwood, by species of tree (1 000 m³). Preliminary figures (C) (2006K1 - 2008K4)

<u>06986</u>: Average pric per cubic metre, by assortment (NOK per m3) (1991-1992 - 1995-1996)

06216: Average price per cubic metre, by assortment (C) (1996 - 2007)

03794: Commercial roundwood removals, gross value (NOK 1 000). (M) (1996 - 2007)

04805: Commercial roundwood removals, gross value (NOK mill.). Preliminary figures (C) (2004 - 2005)

04800: Roundwood removals, by assortment (1 000 m³). Preliminary figures (2004 - 2005)

04799: Commercial roundwood removals, by species of tree (1 000 m<sup>3</sup>). Preliminary figures (C) (2004 - 2005)

03834: Commercial roundwood (1 000 m³) (1996 - 2007)

<u>06963: Commercial roundwood removals, gross value (NOK 1 000)</u> (1991-1992 - 1995-1996)

<u>06964: Commercial roundwood removals, by species of tree</u> (1991-1992 - 1995-1996)

<u>06965: Commercial roundwood removals, by species of tree and buyer group</u> (1991-1992 - 1995-1996)

06966: Commercial roundwood removals, by assortment (1991-1992 - 1995-1996)

<u>04454: Commercial roundwood removals (1 000 m³) (1923-1924 - 1995-1996)</u>

03795: Commercial roundwood removals, by species of tree (m³). (M)

(1996 - 2007)

Storage of microdata

Microdata are stored in Statistics Norway.

Official Statistics of Norway Forestry Statistics 2007

5.1. Commercial removals of industrial roundwood, by buyer group, species of tree and assortment. 2007. m<sup>3</sup>

		Buyer group						
	Total removals	Sawmills and wood industries	Mechanical and chemical pulp industries		Other Norwegian buyers	Foreign buyers		
Total removals	8 211 912	4 344 188	2 602 297	143 413	464 061	657 953		
Spruce								
Total	6 233 700 21 488 293 863 166 424 2 569 465 266 502	3 312 130 19 958 278 744 161 367 2 531 754 256 504	2 234 583 - - - - - 238	70 514 - - - -	227 825 1 530 9 074 3 813 33 178 9 760	388 648 - 6 045 1 244 4 533		
Pulpwood Other roundwood	2 914 965 993	63 753 50	2 234 345	70 514 -	169 527 943	376 826 -		
Pine								
Total Special timber First class saw logs Second class saw logs Other saw logs Unsorted saw logs and pulpwood Pulpwood Other roundwood	1 904 546 85 372 141 613 280 378 644 280 26 705 698 417 27 781	1 028 717 45 778 128 777 253 619 571 119 17 343 11 985 96	331 544 - - - - 922 330 622 -	<b>72 341</b> - - - - - 72 341	218 676 39 594 329 332 70 244 8 440 72 052 27 685	253 268 - 12 507 26 427 2 917 - 211 417		
Broad-leaved								
Total	<b>73 666</b> 3 609	<b>3 341</b> 2 613	36 170 -	558 -	<b>17 560</b> 996	16 037 -		
Pulpwood	70 057	728	36 170	558	16 564	16 037		

Source: Commercial roundwood removals, Statistics Norway.

#### 5.2. Commercial removals of industrial roundwood, by seller group, species of tree and assortment. 2007. m³

		Seller group					
	Total removals	Private and muncipalities	Central government and the Educational Fund	Common forests			
Total removals	8 211 912	7 781 056	195 325	235 531			
Spruce							
Total  Special timber  First class saw logs	<b>6 233 700</b> 21 488 293 863	<b>5 940 523</b> 21 488 281 127	<b>104 366</b> - 3 544	<b>188 811</b> - 9 192			
Second class saw logs Other saw logs Unsorted saw logs and pulpwood	166 424 2 569 465 266 502	157 917 2 449 815 266 502	2 023 41 371	6 484 78 279			
Pulpwood Other roundwood	2 914 965 993	2 762 681 993	57 428 -	94 856			
Pine							
Total	1 904 546 85 372 141 613 280 378 644 280 26 705 698 417 27 781	1 772 888 80 581 135 399 266 860 590 639 26 705 645 910 26 794	84 953 3 270 3 456 8 199 36 870 32 346 812	46 705 1 521 2 758 5 319 16 771 - 20 161 175			
Broad-leaved							
Total	<b>73 666</b> 3 609 70 057	<b>67 645</b> 3 609 64 036	<b>6 006</b> - 6 006	<b>15</b> - 15			

Source: Commercial roundwood removals, Statistics Norway.

5.3. Commercial removals of industrial roundwood, by buyer group. County. 2007. m<sup>3</sup>

Nr. County	All groups	Sawmills and wood industries		Fibre and particle board industries	Other Norwegian buyers	Foreign buyers
The whole country	8 211 912	4 344 188	2 602 297	143 413	464 061	657 953
Østfold	533 920	297 124	224 799	-	6 329	5 668
Akershus	570 262	310 171	223 535	43	18 084	18 429
Oslo	22 169	21 216	911	-	11	31
Hedmark	2 482 441	1 245 615	533 579	14 791	180 034	508 422
Oppland	1 095 132	593 160	436 747	56 381	3 914	4 930
Buskerud	981 825	519 178	406 047	-	24 145	32 455
Vestfold	366 159	187 886	158 108	-	515	19 650
Telemark	614 917	333 011	214 952	3 279	11 796	51 879
Aust-Agder	282 323	141 631	65 923	45 064	22 476	7 229
Vest-Agder	127 089	67 439	41 963	10 445	7 242	-
Rogaland	52 553	26 437	20 224	-	1 686	4 206
Hordaland	72 741	38 655	32 850	12	1 224	-
Sogn og Fjordane	46 603	27 115	14 954	-	1 556	2 978
Møre og Romsdal	76 896	52 654	9 047	-	15 195	-
Sør-Trøndelag	287 442	170 162	37 627	-	77 577	2 076
Nord-Trøndelag	464 825	241 197	151 213	-	72 415	-
Nordland	131 764	71 371	29 647	12 415	18 331	-
Troms Romsa	2 851	166	171	983	1 531	-
Finnmark Finnmárku	-	-	-	-	-	<u>-</u>

Source: Commercial roundwood removals, Statistics Norway.

### 5.4. Average prices on spruce, by assortment. County. 2007. NOK per m<sup>3</sup>

						Spruce			
Nr. County	All species of tree	Spruce, total	Special timber	First class saw logs	Second class saw logs	Other saw logs	Unsorted saw logs and pulpwood	Pulpwood	Other roundwood
The whole country	375	374	507	536	468	500	361	241	407
Østfold		371	637	532	478	491	344	245	
Akershus		386	713	541	479	501	394	244	
Oslo		428	-	528	468	488		244	
Hedmark		386	642	547	518	520	345	239	404
Oppland	378	380	370	545	456	517	372	239	
Buskerud		366	479	523	435	498	366	249	
Vestfold		372	535	536	485	506	371	243	
Telemark		358	776	537	414	474	363	243	
Aust-Agder		364	736	529	456	505	320	244	
Vest-Agder		352	-	527	462	462	320	240	
Rogaland		328	534	312	468	429	382	217	
Hordaland		311	494	308		426	288	194	500
Sogn og Fjordane	316	308	291	466	347	301	292	184	
Møre og Romsdal		375	-			461	347	248	
Sør-Trøndelag		373	635	_	322	487	426	234	
Nord-Trøndelag		367	614	452		485	325	239	
Nordland		342	556	371	508	460	309	243	
Troms Romsa	296	305				434	323	195	
Finnmark Finnmárku									

Source: Commercial roundwood removals, Statistics Norway.

Official Statistics of Norway Forestry Statistics 2007

### 5.5. Average prices of pine, by assortment. County. 2007. NOK per m³

Pi					Pine				
Nr. County	All species of tree	Pine, total	Special timber	First class saw logs	Second class saw logs	Other saw logs	Unsorted saw logs and pulpwood	Pulpwood	Other roundwood
The whole country	375	384	702	534	441	478	381	209	304
Østfold	000	352	779	547	409	466	436	203	
Akershus	386	391	776	541	419	490	271	208	
Oslo	423	295	693	512	405			205	
Hedmark	388	396	710	564	511	489	403	215	302
Oppland	378	365	661	542	390	468	242	213	272
Buskerud		393	687	571	404	480	437	210	
Vestfold	368	393	643	590	441	460		203	
Telemark	359	367	679	501	435	348	396	197	491
Aust-Agder	358	366	652	528	452	364	313	204	499
Vest-Agder	356	380	633	531	447	465	385	202	498
Rogaland	321	275		419	330	382	386	197	
Hordaland		340	579	474	324	395	323	187	
Sogn og Fjordane	316	357	849	515	331	428	357	171	
Møre og Romsdal	390	429	669	594	453	528	400	211	
Sør-Trøndelag		387	741	556	428	503	290	197	
Nord-Trøndelag	366	361		551	415	423		206	•
Nordland	340	317		575	417	332		209	550
Troms Romsa	296	303				415		198	
Finnmark Finnmárku		-	•	-	-	-		-	

Source: Commercial roundwood removals, Statistics Norway.

#### 5.6. Average prices of broad-leaved wood, by assortment. County. 2007. NOK per m<sup>3</sup>

			Broad-leaved			
Nr. County	All species of tree	Broad-leaved, total	Special timber and sawlogs	Pulpwood		
The whole country	375	225	414	215		
Østfold	366	242	411	221		
Akershus	386	201	495	190		
Oslo	423	217	·	217		
Hedmark	388	231	249	231		
Oppland	378	258	344	251		
Buskerud	373	204	381	200		
Vestfold	368	185	521	172		
Telemark	359	197	387	192		
Aust-Agder	358	222	429	203		
Vest-Agder	356	256	416	221		
Rogaland	321	333	345	313		
Hordaland	313	229	248	221		
Sogn og Fjordane	316	284	371	196		
Møre og Romsdal	390	269	603	242		
Sør-Trøndelag	374	246	352	241		
Nord-Trøndelag	366	279	357	278		
Nordland	340	278	·	278		
Troms Romsa	296	252	304	233		
Finnmark Finnmárku			-			

Source: Commercial roundwood removals, Statistics Norway.

### 6. Forestry, structural statistics

### 6.1. Introduction and history

The purpose of these statistics is to provide an overview of both the forest properties and forestry as an industry. The statistics also provide information on age, sex, income and education of forest owners.

Since 2006, Statistics Norway has published annual statistics for all forest properties by merging data from different administrative data sources. Prior to this, statistics for all forest properties were only available based on full censuses, the last of which was in 1989.

### 6.2. Users and applications

The main users of the statistics are professional forestry organisations, The Ministry of Agriculture and Food and various research and educational institutions.

### 6.3. Population and publishing

The statistics comprise all properties in the Farm Register of the Norwegian Agricultural Authority with at least 25 decares of productive forest area. Some forest owners are represented in the Farm Register with more than one property within one municipality. In these cases, the properties owned by the same owner are merged into one property within the municipality. Thus the statistics on forest properties will include fewer units than the Farm Register. Common forests owned by the central government (Statsallmenning) will always be counted as one single property.

In the statistics on personal forest owners, the forest owners' productive forest areas in Norway are aggregated, independent of municipality borders. Statistics on incomes are based on the forest owners' municipality for tax purposes. Other individual statistics on personal forest owners are based on the municipality where the forest owners live.

Statistics on average incomes, debt, gross property and assessed taxes are published for personal forest owners with positive self-employment income from forestry. Incomes, debt, gross property and assessed taxes are published solely for personal forest owners and are aggregated for the same owners and their spouses and cohabitants.

The figures are published annually.

#### 6.4. Data sources and collection of data

The statistics are derived from existing administrative data files.

The Farm Register of the Norwegian Agricultural Authority serves as the backbone of the statistics. The information from the Farm Register is combined with information at property level from different data sources such as the Register of Timber Trade and Diverted Trust Fund, and the Forest Trust Fund. Information on the forest owners comes from the Central Population Register, the Register on Personal Tax Returns and the Register on Tax Assessment for Personal Taxpayers.

### 6.5. Sampling

The statistics are derived from the whole population of forest properties.

#### 6.6. Control and revision

The statistics are based on linked data files that were edited separately when established. The information on the productive forest area of the properties in the Farm Register is checked if errors are suspected. Examples: i) If a forest property has commercial felling and does not have a forest area. ii) If a large forest property does not have commercial felling.

### 6.7. Confidentiality

Figures are not presented if there is a risk of identifying any respondent.

Concepts, variables and classifications

### 6.8. Concepts, variables and classifications

Definition of the concepts and vari

*Forest property*: property with at least 25 decares of productive forest area. Property parcels belonging to the same owner within one municipality are treated as one property.

*Personal forest owner:* forest owner owning forest area as an individual owner. Forest areas owned jointly by several individuals are included for one of the owners; the reference owner.

Legal owners: central government, the Educational Fund, common forest owned by the central government ("Statsallmenning"), common forest not owned by the central government ("Bygdeallmenning"), limited company, foundation, municipality etc.

Standard classifications

County

Classification of forest properties by size class

### 6.9. Sources of error and uncertainty

Measurement and processing errors

The main concern is the quality of the Farm Register. The productive forest area of properties is sometimes missing or erroneous. We also believe that some small properties may be missing in the register. Furthermore, errors may arise when data are entered into the various administrative registers.

About 2-3 per cent of the quantity of commercial roundwood felled is not linked to any property in the population.

With regard to co-operative ownership, the statistics on forest owners comprise only the reference owner. Self-employment income from forestry for the remaining personal owners in the co-operative is not included. In total, 3-4 per cent of the self-employment income from forestry is missing.

Non-response errors

In reality, the number of personal forest owners is higher than in these statistics, because only the reference owner in a co-ownership is included. Some personal forest owners are deceased and no new owner has been registered, some live abroad or information is missing for other reasons. These owners amount to 3-4 per cent of the personal forest owners and are excluded from the statistics on incomes.

#### 6.10. Comparability and coherence

Comparability over time and space

The statistics on forest properties are comparable with statistics from the Census of Forestry 1967 and the Censuses of Agriculture and Forestry 1979 and 1989. They are also essentially comparable with statistics from the Sample Survey of Agriculture and Forestry in the 1990s and in 2000, 2004 and 2008. The number of forest properties has fallen from 128 300 in 1967 to 116 502 in 2005. The Censuses of Agriculture and Forestry 1979 and 1989 calculated 120 900 and 125 500 forest

properties respectively. It is difficult to trace all small-sized properties without commercial felling. In some regions it is difficult to assess whether the areas are productive or not. This causes difficulties when comparing the number of forest properties over time.

Statistics are published for both forest properties and personal forest owners. The following is a brief explanation of the relationship between these units: a forest property is the forest owners' total productive forest area within a municipality. A forest owner may own forest properties in more than one municipality. Therefore the number of forest owners is less than the number of forest properties with a personal forest owner. About 113 000 forest properties with a personal owner are registered in The Farm Register. Out of the personal forest owners, almost 3 000 are deceased, living abroad or lacking information. The statistics on incomes are based on the 108 800 living personal forest owners.

Coherence with other statistics

Statistics Norway has yearly statistics on commercial roundwood removals and silviculture based on the same sources as these statistics. Linking the Farm Register with these sources makes it possible to publish figures on commercial removals and silviculture by the size of the productive forest area of the properties and the forest owners' productive forest area.

The National Forest Inventory also publishes figures on the productive forest area in Norway. The inventory estimates a productive forest area that is more than 10 per cent larger than the aggregated areas from the forest properties in The Farm Register. The National Forest Inventory estimates the area based on sample plots, and their assessment of whether the areas are productive or not sometimes differs from the forest owners' assessment.

<u>Statistics on the farmers' income and property</u> are provided yearly. These statistics comprise natural persons operating agricultural holdings.

Statistics Norway also presents income statistics for all self-employed persons, see <a href="http://www.ssb.no/english/subjects/05/01/ifpn\_en/">http://www.ssb.no/english/subjects/05/01/ifpn\_en/</a>.

#### 6.11. Main results

Forest properties

One in seven forest properties cut timber for sale in 2007. The average quantity per property was 504 cubic metres. The forest owners of the counties of Buskerud and Hedmark were most active. More than one in four in these counties cut for sale.

According to the 2007 Farm Register, there were 117 700 forest properties with a productive forest area of 25 decares or more in Norway, of which almost 16 400 cut timber for sale. This is 1 300 more than in 2006. Forest owners in the counties of Buskerud and Hedmark were most active, with more than one in four properties carrying out commercial roundwood removals.

The activity level varied considerably between the counties. In the western part of Norway, one in four forest properties had commercial removals and in the northern part of the country the figure was even lower. In the country as a whole, a total of 50 600 forest properties sold timber in the last 10-years period.

In 2007, average commercial round wood removals per property was 504 cubic meters, 24 cubic meters more than in 2006 and 175 cubic meters more than ten years ago.

In 2007, the average property size was 575 decares. 2 500 of the properties were owned by the government or other impersonal owners. 24 per cent of the properties owned by a private person were owned by a woman. In 1989, the corresponding share was 17 per cent.

39 200 of the forest properties were owned by a person who also runs an agricultural holding, 700 fewer than in 2006.

In the beginning of 2007, the forest owners had an aggregated value of NOK 834 million in the Forest Trust Fund. In total, forest owners in Hedmark had NOK 168 million at their disposal. During 2007 a total of NOK 81 million was disbursed from the Forest Trust Fund to the owners.

Personal forest owners

In total, 25 900 of Norway's personal forest owners had entrepreneurial income from forestry in 2006. The average income from forestry was NOK 30 300, almost half of the amount in 2005.

There are 109 000 personal forest owners with a productive forest area of 25 decares or more in Norway. Their accumulated entrepreneurial income from forestry was NOK 784 million in 2006. In addition, spouses of forest owners had NOK 88 million in income from forestry in the same year. In 2005, the corresponding income was NOK 1.6 billion and NOK 220 million respectively. In other words, the entrepreneurial income from forestry was halved from 2005 to 2006. The large income in 2005 was mainly due to changes in tax regulations, which entered into force on 1 January 2006. The same changes were implemented for self-employed in other industries. In 2000-2004, the entrepreneurial income from forestry was slightly higher than in 2006.

In 2006, the average gross income for forest owners with entrepreneurial income from forestry was NOK 393 000. Income from forestry accounted for 8 per cent of the gross income while other entrepreneurial income accounted for 32 per cent. Income from wages and salaries accounted for 41 per cent, and the remainder was made up of pensions and other income.

Forest owners from Hedmark had the highest average entrepreneurial income from forestry in 2006, with NOK 51 500. In this county, 37 per cent of the forest owners had entrepreneurial income from forestry. However, Nord-Trøndelag had the highest proportion of forest owners with positive entrepreneurial income, with 47 per cent. In the three northernmost counties, only a marginal share of the forest owners had entrepreneurial income from forestry.

One in four forest owners are women. Women made up 16 per cent of the forest owners with positive forestry income in 2006. Their average entrepreneurial income from forestry was 10 per cent higher for female than male forest owners.

Three in five forest owners with positive forest income in 2006 run their own agricultural holding. Their average entrepreneurial income from agriculture was twice as large as the corresponding income from forestry. In 2006, the entrepreneurial income from agriculture was NOK 79 400 on average.

The education level of forest owners is slightly lower than in the population as a whole. While statistics on <u>tertiary education</u> show that one in four in the population had higher education in 2006, this only applied to one in seven forest owners. The main reason for this difference is the high average age of forest owners. Among forest owners living in cities, the education level is the same as in the population as a whole.

### 6.12. Availability

http://www.ssb.no/english/subjects/10/04/20/stskog en/

More tables in Today's statistics

Table 1 Forest properties, by county and size class. 2007

<u>Table 2 Productive forest area, by county and size class in decares. 2007. Decares Table 3 Forest properties with commercial roundwood removals, by county and size of property. 2007</u>

<u>Table 4 Commercial roundwood removals</u>, by county and property size in decares. Solid cubic metres. 2007

Table 5 Forest properties in combination with agricultural holding, by county and size of productive forest area. 2007

Table 6 Forest owners, by type of owner, county and property size. 2007

<u>Table 7 Forest Trust Fund. Balance payment and disbursement of fund, by county and productive forest area. 2007. NOK 1 000</u>

<u>Table 1 Average incomes, debt, gross wealth and assessed taxes for personal forest owners with positive entrepreneurial income from forestry. By county, size of productive forest area, sex and age. 2006. NOK</u>

<u>Table 2 Average incomes, debt, gross wealth and assessed taxes for personal forest owners with at least 25 decares productive forest area. By county, size of productive forest area, sex and age. 2006. NOK 1 000</u>

<u>Table 3 Productive forest area, by where the forest area of personal forest owners are situated. Decares. 2006</u>

<u>Table 4 Entrepreneurial income forestry for personal forest owners, by size of income.</u> 2005 and 2006. NOK 1 000

#### More tables in StatBank

06307: Forest properties, by size class (decares). (C) (2005 - 2007)

06310: Roundwood cut for sale, by size class (m<sup>3</sup>) (2005 - 2007)

06311: Forest properties, by number of years with commercial roundwood removals (C) (1996-2005 - 1998-2007)

06312: Forest properties, by sex of forest owners and property size (2005 - 2007)

<u>06316</u>: Forest properties combined with agricultural holding, by size of productive forest area (C) (2006 - 2007)

<u>06327: Forest properties, by number of years with commercial roundwood removals and size</u> (1996-2005 - 1998-2007)

<u>06387</u>: Forest properties with commersial roundwood removals, by property size (decares). (C) (2005 - 2007)

<u>06504: Productive forest area, by where the forest area of personal forest owners are situated (decares). (C) (2005 - 2006)</u>

06331: Productive forest area, by size class (decares) (2005 - 2007)

<u>06506</u>: Industrial roundwood removals, by size of productive forest area and type of owner (2005 - 2006)

06501: Incomes, debt, taxable gross wealth and assessed taxes for personal forest owners and their cohabitants and spouses (NOK 1 000). (C) (2005 - 2006) 06502: Average incomes, debt, taxable gross wealth and assessed taxes for

personal forest owners with entrepreneurial incomes in forestry. (C) (2005 - 2006)

<u>06508</u>: Gross income, debt, taxable gross wealth and assessed taxes for personal forest owners with at least 25 decares productive forest area (C) (2005 - 2006)

06496: Personal forest owners level of education, by county, (C) (2005 - 2006)

<u>06659</u>: Tending of young forest stands and planting, by size of productive forest area (decares). (C) (2006 - 2007)

#### Completed time series:

 $\underline{06314}$ : Forest properties with individual forest owners, by the owners sex and age  $\underline{(C)}$  (2005)

<u>06332</u>: Forest properties with individual forest owners, by sex, age and size (2005)

#### Storage of microdata

Microdata are stored at Statistics Norway.

#### 6.1. Forest properties<sup>1</sup> by county and size class. 2007

				Size class b	y productiv	e forest area	a in decares		
County	Total	25-99	100-249	250-499	500-999	1000-1999	2000-4999	5000- 19 999	> 20 000
Country	117 684	35 913	32 690	21 700	15 097	7 754	3 384	924	222
County									
Østfold	5 189	1 703	1 485	927	613	306	109	40	6
Akershus and Oslo	5 199	1 851	1 390	916	589	269	108	56	20
Hedmark	10 847	3 518	2 508	1 672	1 355	857	569	284	84
Oppland	10 545	3 280	2 925	1 784	1 295	749	352	138	22
Buskerud	7 405	1 857	1 766	1 341	1 162	681	448	135	15
Vestfold	3 567	1 431	1 112	549	301	128	37	6	3
Telemark	6 407	1 486	1 389	1 223	1 060	768	390	79	12
Aust-Agder	4 248	945	934	673	662	611	376	46	1
Vest-Agder	5 159	822	1 373	1 299	1 060	505	97	3	-
Rogaland	4 373	1 684	1 299	724	433	188	44	1	-
Hordaland	8 230	3 013	2 784	1 544	698	163	24	4	-
Sogn og Fjordane	5 959	1 781	1 945	1 214	709	269	31	9	1
Møre og Romsdal	8 151	2 963	2 523	1 482	862	273	44	4	-
Sør-Trøndelag	7 333	1 939	1 850	1 511	1 193	622	185	22	11
Nord-Trøndelag	6 141	1 563	1 455	1 233	960	515	321	66	28
Nordland	10 256	3 300	2 970	2 023	1 279	512	143	21	8
Troms Romsa	8 152	2 408	2 865	1 558	864	337	105	9	6
Finnmark Finnmárku	523	369	117	27	2	1	1	1	5

<sup>&</sup>lt;sup>1</sup>Property in The Farm Register with at least 25 decares productive forest area. A forest property includes the total productive forest area owned by one owner within a municipality.

Source: Forestry, structural statistics, Statistics Norway.

#### 6.2. Productive forest area<sup>1</sup>, by county and size class in decares. 2007

				Size class	by productiv	e forest area	a in decares		
County	Total	25-99	100-249	250-499	500-999	1000-1999	2000-4999	5000- 19 999	> 20 000
Country 6	7 616 226	2 006 153	5 265 593	7 606 931	10 446 584	10 604 851	9 911 321	8 083 572	13 691 221
County									
Østfold	2 379 313	97 009	239 127	324 614	425 647	420 536	341 576	349 837	180 967
Akershus and Oslo	3 264 494	103 535	223 538	323 886	404 571	370 936	330 220	491 361	1 016 447
Hedmark1	3 144 426	189 854	403 199	590 975	955 866	1 188 418	1 742 569	2 662 727	5 410 818
Oppland	6 530 163	187 830	470 216	628 290	917 403	1 037 761	1 047 341	1 145 540	1 095 782
Buskerud	5 714 268	106 108	286 152	474 731	819 455	955 594	1 363 478	1 095 417	613 333
Vestfold	1 318 134	79 684	178 974	192 427	202 727	170 472	104 682	74 805	314 363
Telemark	5 062 648	82 537	225 737	439 874	747 782	1 085 989	1 115 514	652 822	712 393
3	3 257 132	52 645	146 792	237 164	472 538	859 975	1 094 645	356 564	36 809
	2 403 499	47 010	221 848	455 419		668 754	256 361	26 193	-
Rogaland	1 220 904	90 467	211 235	250 049	295 661	250 703	117 393	5 396	-
Hordaland	1 908 373	168 570	449 797	526 522	462 688	204 026	63 088	33 682	-
5 - 5 ,	1 841 413	100 147	307 575	420 046	477 852	351 315	79 555	84 923	20 000
Møre og Romsdal	2 175 379	166 522	404 068	514 435		352 723	115 549	34 873	-
	3 703 524	110 876	305 263	537 453	828 177	849 140	509 680	190 430	372 505
Nord-Trøndelag	5 606 996	84 759	237 613	440 598	669 635	722 729	935 384	585 233	1 931 045
	4 269 985	182 829	479 324	700 188	868 222	670 972	390 661	186 456	791 333
Troms Romsa		137 092	457 887	541 789	581 925	443 808	301 439	92 313	385 448
Finnmark Finnmárku	873 874	18 679	17 248	8 471	1 312	1 000	2 186	15 000	809 978

<sup>&</sup>lt;sup>1</sup> Includes properties in The Farm Register with at least 25 decares productive forest area.

Source: Forestry, structural statistics, Statistics Norway.

6.3. Forest properties<sup>1</sup> in combination with agricultural holding, by county and size of productive forest area. 2007

	With			Size class b	y productiv	e forest area	a in decares		
County	agricultural - holding in total	25-99	100-249	250-499	500-999	1000-1999	2000-4999	5000- 19999	> 20 000
Country	39 207	7 806	10 388	8 628	6 715	3 711	1 572	350	37
County									
Østfold	2 394	531	704	519	363	187	68	21	1
Akershus and Oslo	2 158	525	591	489	333	146	52	18	4
Hedmark	3 313	589	719	645	585	418	243	98	16
Oppland	4 538	869	1 167	941	781	487	224	66	3
Buskerud		338	503	517	490	298	203	59	2
Vestfold	1 569	468	511	306	178	81	24	-	1
Telemark	1 514	210	250	308	312	265	139	26	4
Aust-Agder	696	71	103	104	122	154	126	16	-
Vest-Agder		65	170	248	267	209	28	1	-
Rogaland		748	676	402	261	110	24	-	-
Hordaland		691	994	694	332	71	11	1	-
Sogn og Fjordane	2 843	609	959	679	418	155	19	3	1
Møre og Romsdal	2 677	559	853	622	471	143	27	2	-
Sør-Trøndelag	2 819	368	624	685	646	378	110	7	1
Nord-Trøndelag	3 057	523	713	704	557	340	190	28	2
Nordland	1 947	426	466	454	377	169	51	3	1
Troms Romsa	1 163	161	347	299	221	100	33	1	1
Finnmark Finnmárku	106	55	38	12	1	-	-	-	-

<sup>&</sup>lt;sup>1</sup> Property in The Farm Register with at least 25 decares productive forest area. A forest property includes the total productive forest area owned by one owner within a municipality.

Source: Forestry, structural statistics, Statistics Norway.

### 6.4. Forest owners by type of owner, county and property size. 2007

County	Forest owners in	Individual fores	t owners	Unpersonal	Properties of	Unidentified
County	total	Males	Females	forest owners	persons deceased	owner
Country	117 684	82 682	25 995	2 575	5 164	1 268
County						
Østfold	5 189	3 657	1 151	158	159	64
Akershus and Oslo	5 199	3 564	1 140	265	158	72
Hedmark	10 847	7 459	2 553	244	438	153
Oppland	10 545	7 649	2 269	208	293	126
Buskerud		5 104	1 706	194	310	91
Vestfold		2 618	741	93	80	35
Telemark		4 373	1 533	150	313	38
Aust-Agder		3 029	924	73	200	22
Vest-Agder		3 636	1 137	101	262	23
Rogaland	4 373	3 263	782	140	144	44
Hordaland	8 230	6 040	1 668	145	313	64
Sogn og Fjordane		4 540	1 057	51	242	69
Møre og Romsdal		6 063	1 648	108	303	29
Sør-Trøndelag		5 448	1 419	201	180	85
Nord-Trøndelag	6 141	4 648	1 115	155	139	84
Nordland		6 411	2 723	195	809	118
Troms Romsa		4 871	2 280	79	781	141
Finnmark Finnmárku	523	309	149	15	40	10
Size class by productive						
forest area in decares						
25- 99 decares	35 913	23 972	8 854	647	2 014	426
100- 249 decares	32 690	23 036	7 334	468	1 528	324
250- 499 decares	21 700	15 664	4 661	344	828	203
500- 999 decares	15 097	11 191	2 903	350	508	145
1 000- 1 999 decares	7 754	5 768	1 463	251	201	71
2 000- 4 999 decares	3 384	2 429	626	218	64	47
5 000-19 999 decares	924	567	141	166	19	31
20 000- decares	222	55	13	131	2	21

Source: Forestry, structural statistics, Statistics Norway.

# 6.5. Average incomes<sup>1</sup>, debt, gross property and assessed taxes for personal forest owners with positive entrepreneurial income from forestry<sup>1</sup>. By county, size of productive forest area, sex and age. 2006. NOK

	Forest owners with positive entre-preneurial income from	Gross income, total <sup>2</sup>	Debt	Gross property	Assessed tax	Personal wages and pensions	Wages and saleries	entrepren urial	Entrepre neurial income forestry <sup>3</sup>	Entre- preneu- rial income agricu- Iture <sup>4</sup>	Other income
	forestry										
The whole country	25 920	393 400	991 700	2 124 200	102 700	198 300	160 700	157 700	30 300	79 400	36 900
County											
Østfold	2 064	426 500	1 172 200	2 340 100	114 100	218 200	178 900	176 100	27 100	89 300	31 800
Akershus and Oslo		502 400	1 571 300	4 083 400	148 100	264 300	213 100	169 700	38 600	68 900	67 600
Hedmark	3 329	404 700	1 176 400	2 314 600	103 300	195 600	151 900	166 600	51 500	80 200	41 800
Oppland	3 442	355 000	867 200	1 941 100	89 300	172 400	140 600	158 500	30 000	79 400	23 700
Buskerud		431 900	945 400	2 340 600	119 500	211 800	171 400	163 400	40 300	58 300	55 800
Vestfold		468 800	1 198 000	2 701 900	129 900	234 800	195 000	177 000	30 400	82 000	56 100
Telemark		365 800	643 600	1 504 600	95 700	233 000	181 700	105 600	25 200	35 100	26 800
Aust-Agder		362 100	616 300	1 445 800	94 700	225 000	174 500	103 500	28 100	38 300	33 100
Vest-Agder		373 700	772 900	1 467 000	95 500	224 100	173 700	113 300	18 900	50 700	36 200
Rogaland		392 900	1 103 900	1 830 000	98 200	164 700	137 400	188 400	25 000	115 800	38 900
Hordaland		332 500	680 000	1 330 900	81 800	185 200	161 500	125 900	11 500	76 200	21 100
Sogn og Fjordane		351 900	747 900	1 693 800	86 900	172 100	151 200	134 600	11 300	81 200	45 000
Møre og Romsdal		343 600	770 600	1 599 700	84 800	146 800	122 100	168 100	14 100	103 400	28 300
Sør-Trøndelag		345 100 360 500	769 200 1 061 800	1 600 900 1 670 200	84 300 85 800	168 300 151 400	136 400 131 000	150 900 188 700	19 200 22 000	96 000 125 200	25 500 19 900
Nord-Trøndelag Nordland		302 900	663 400	1 199 300	68 500	145 500	108 500	134 100	19 800	93 200	23 100
Troms Romsa		338 300	802 300	1 234 400	80 400	190 700	153 700	134 100	16 200	92 100	15 900
Finnmark Finnmárku		:	:	:	:	:	100 700	:	:	32 100	10 000
Productive forest area											
25- 99 decares .	2 704	365 600	827 900	1 697 800	94 100	222 200	174 000	118 700	14 400	64 200	24 200
100- 249 decares .		380 400	839 700	1 697 400	98 200	213 000	173 300	135 000	15 500	74 500	32 100
250- 499 decares .	5 900	377 400	910 800	1 812 500	96 900	194 500	157 700	153 400	19 700	84 800	29 100
500- 999 decares .	5 461	383 000	1 074 500	2 138 600	97 800	185 100	149 800	159 800	26 100	85 400	37 600
1 000- 1 999 decares .	3 625	393 500	1 029 600	2 201 400	103 100	188 300	154 200	169 600	42 100	81 300	35 000
2 000- 4 999 decares .		446 700	1 126 500	2 704 500	123 400	185 300	154 100	211 100	71 500	83 500	49 300
5 000-19 999 decares .		685 200	2 014 400	6 458 600	203 100	207 000	167 500	302 900	171 000	63 600	173 200
20 000	44	1 677 000	11 352 200	44 685 300	595 100	182 200	159 200	1 018 100	598 900	61 700	470 200
Age											
Below 30 years	441	356 600	1 548 400	1 584 700	76 800	175 200	174 800	163 500	37 700	68 100	17 800
30-39 years		404 900	1 536 600	1 925 900	94 800	204 400	202 800	180 600	35 900	90 200	19 700
40-49 years		428 000	1 236 600	2 117 400	111 400	205 800	201 700	188 100	32 900	96 300	33 800
50-59 years		421 300	1 040 600	2 453 700	117 700	203 200	190 800	173 800	30 000	89 600	43 700
60-69 years		353 700	538 900	2 034 600	94 600	183 300	102 500	128 000	26 700	65 100	41 400
70 years and above		276 700	175 800	1 681 100	63 400	187 100	4 300	45 900	21 200	14 400	43 000
Sex											
Males		404 000	1 058 600	2 185 900	106 200	197 400	168 700	168 700	29 700	86 300	37 300
Females	4 042	336 000	629 700	1 790 400	84 100	203 300	97 900	97 900	33 200	42 000	34 400

<sup>&</sup>lt;sup>1</sup>The statistics are based on data from tax statistics for personal taxpayers. <sup>2</sup>Gross income is total wages, salaries, pensions, entreprenurial income and property income before deductions. <sup>3</sup> Entrepreneurial income from forestry also comprises income from primary industries in other municipalities. <sup>4</sup> Entrepreneurial income from agriculture also comprises sickness benefit from primary industries.

Source: Forestry, structural statistics, Statistics Norway.

6.6. Income<sup>1</sup>, debt, net property and assessed taxes for personal forest owners with at least 25 decares productive forest area. By county, size of productive forest area, sex and age. 2006. NOK 1 000.

	Forest owners	Gross income, total <sup>2</sup>	Debt	Gross property		Personal wages and pensions		Total entreprenu rial income	neurial income	Entrepren eurial income agricultur e <sup>4</sup>	Other income
The whole country	400 OFF	20 457 004	75 574 244	470 022 504	40 260 242	26 244 620	40.275.406	0.025.204	704 460	4 244 670	4 425 026
country	100 900	33 437 031	15 51 1 344	179 932 501	10 200 312	20 241 029	19 3/3 490	9 025 201	104 400	4 344 67 6 4	+ 135 336
Østfold Akershus and		1 994 884		9 910 465		1 162 491	893 425	591 646	55 879	282 949	238 053
Oslo			10 504 982	31 429 350		2 757 837		900 462	86 271	238 716	705 432
Hedmark Oppland		3 103 109 2 996 636	7 371 043 6 202 955	14 265 727 13 366 697		1 964 836 1 865 224		913 941	171 600 103 258	410 322 444 709	284 108 213 911
Buskerud		2 807 531	5 205 667	20 561 068		1 680 396			103 256	233 314	398 327
Vestfold		1 602 450		8 503 796	441 943	956 935		419 011	42 235	192 878	222 949
Telemark		1 912 102		7 537 759		1 397 740		346 663	40 745	99 907	164 775
Aust-Agder		1 285 733		5 474 696	338 317	916 713		204 482	27 104	61 541	163 547
Vest-Agder		1 731 067		6 831 615	454 657	1 268 253	894 222	227 325	15 583	77 716	233 976
Rogaland	4 470	1 782 525		7 300 977		1 096 541		468 667	8 735	302 308	214 156
Hordaland Sogn og	7 811	2 894 728	4 250 838	9 339 332	762 825	2 132 384	1 626 062	432 223	8 361	203 114	327 938
Fjordane Møre og		1 743 370	2 964 566	7 076 855		1 157 842		414 813	7 747	250 774	169 200
Romsdal Sør-Trøndelag		2 497 331	4 114 033	9 288 078		1 733 395		556 759	9 920	308 078	204 515
Nord-	7 020	2 339 508	4 083 551	8 584 380		1 586 019		569 157	37 074	348 231	181 650
Trøndelag		1 938 341	4 715 792	7 647 212		1 109 976		698 283	57 104	451 534	127 651
Nordland Troms Romsa .	8 590 6 485	2 428 193 1 859 662		7 111 382 5 242 390		1 860 851 1 468 668		424 762 256 461	9 078 :	276 350 145 891	140 689 :
Finnmark Finnmárku	537	164 232	258 372	460 723	33 695	125 530	82 527	27 315	:	16 346	:
Productive											
forest area 25-99 decares . 100 - 249	32 831	11 238 137	18 518 579	40 224 957	2 885 964	8 430 472	5 999 691	1 770 357	38 922	788 133 <sup>2</sup>	1 024 105
decares 250 - 499	30 388	10 731 001	18 798 281	47 801 972	2 780 972	7 433 600	5 458 664	2 232 812	90 642	1 127 881 1	1 053 334
decares 500 - 999	20 423	7 261 722	14 114 226	31 534 427	1 860 405	4 695 331	3 500 243	1 852 919	116 444	990 065	702 606
decares 1 000 - 1 999	14 134	5 167 575	11 519 272	25 106 268	1 333 191	3 158 078	2 414 996	1 468 716	142 682	782 656	534 096
decares 2 000 - 4 999		2 889 537		17 808 316	786 925	1 638 574			152 498	419 367	371 475
decares 5 000 - 19 999		1 560 772		9 636 055	423 572	708 565			129 707	195 244	285 563
decares 20 000 decares and	727	480 089	1 398 530	4 583 600	146 915	162 694	129 374	195 878	87 223	38 314	119 736
more	68	128 257	704 567	3 236 907	50 367	14 316	11 067	68 457	26 350	3 017	45 020
Age Below 30											
years	2 461	803 088	2 881 332	2 603 343	178 175	541 299	536 187	216 042	21 502	104 575	45 486
30-39 years			13 852 722	16 020 989				1 280 963		655 769	251 412
40-49 years	22 806	9 702 610	24 159 066	38 795 412	2 572 381	6 019 992	5 864 553	2 836 987			838 805
50-59 years	28 916	12 101 291	22 622 607	53 297 786	3 417 050	7 804 511	7 234 201	2 992 141			
60-69 years	23 649	7 909 664	9 656 832	38 304 648	2 062 762	5 489 657	2 884 538	1 419 704	131 153	691 494	985 947
70 years and older	19 988	4 604 013	2 398 785	30 910 323	983 654	3 584 667	85 286	279 364	52 000	77 490	727 277
Sex	00.070	20 560 770	66 500 000	454 007 000	0 607 504	20 074 004	15 015 004	0 404 000	GEO 244	2 040 200 2	) 4EC 700
Male Female				25 695 238					134 157	3 949 309 3 395 369	

The statistics are based on data from the registers of tax returns and assesed taxes. <sup>2</sup> Gross income is total wages, salaries, pensions, entreprenurial income and property income before deductions. <sup>3</sup> Entrepreneurial income from forestry also comprises income from primary industries in other municipalities. <sup>4</sup> Entrepreneurial income from agriculture also comprises sickness benefit from primary industries. Source: Forestry, structural statistics, Statistics Norway.

#### 6.7. Productive forest area, by where the forest area of personal forest owners are situated. 2006. Decares

	In the municipality of residence	In another municipality	In another municipality, per cent
Country	42 676 408	9 579 908	18
County			
Østfold	1 755 593	360 439	17
Akershus	1 725 096	1 650 727	49
Oslo	7 815	1 427 897	99
Hedmark	6 493 205	887 271	12
Oppland	4 273 260	418 929	9
Buskerud	3 922 627	716 787	15
Vestfold	903 198	561 512	38
Telemark	3 363 452	523 600	13
Aust-Agder	2 422 235	345 223	12
Vest-Agder	1 790 868	496 364	22
Rogaland	979 324	276 199	22
Hordaland	1 533 168	298 909	16
Sogn og Fjordane	1 574 582	132 688	8
Møre og Romsdal	1 848 532	195 500	10
Sør-Trøndelag	2 741 796	342 614	11
Nord-Trøndelag	2 931 609	248 187	8
Nordland	2 582 119	406 792	14
Troms Romsa	1 788 436	263 090	13
Finnmark Finnmárku	39 493	27 180	41

Source: Forestry, structural statistics, Statistics Norway.

#### 6.8. Forest properties with commercial roundwood removals<sup>1</sup>, by county and size of property. 2007

				Size class b	y productiv	e forest area	a in decares		
	In total	25-99	100-249	250-499	500-999	1000-1999	2000-4999	5000- 19999	> 20 000
Country									
2005	15 264	1 237	2 477	2 940	3 326	2 721	1 736	646	181
2006	15 100	1 175	2 410	3 222	3 226	2 605	1 655	635	172
2007	16 360	1 565	2 790	3 162	3 443	2 784	1 775	659	182
County									
Østfold	1 157	122	236	255	252	176	80	30	6
Akershus and Oslo	912	108	161	190	192	137	62	45	17
Hedmark	2 898	407	520	424	456	431	366	225	69
Oppland	2 091	219	344	399	425	345	233	105	21
Buskerud	1 971	163	297	346	428	332	282	110	13
Vestfold	860	122	270	209	141	78	32	5	3
Telemark	1 277	76	161	216	268	273	210	62	11
Aust-Agder	751	21	58	91	151	214	189	26	1
Vest-Agder	589	29	85	131	178	134	30	2	-
Rogaland	205	24	36	46	48	41	10	-	-
Hordaland	338	48	97	111	64	14	2	2	-
Sogn og Fjordane	356	39	88	119	73	27	8	2	-
Møre og Romsdal	460	41	90	116	127	71	15	-	-
Sør-Trøndelag	909	58	123	184	252	213	63	6	10
Nord-Trøndelag	1 126	69	156	234	254	205	156	30	22
Nordland	409	19	66	86	117	77	29	8	7
Troms Romsa	51	-	2	5	17	16	8	1	2
Finnmark Finnmárku	-	-	-	-	-	-	-	-	-

<sup>&</sup>lt;sup>1</sup> The figures are given by the Register of Timber Trade and Diverted Trust Fund (VSOP).

Source: Forestry, structural statistics, Statistics Norway.