

# About the statistics

## Definitions

Name and topic

Name: The National Forest Inventory  
Topic: Agriculture, forestry, hunting and fishing

Next release

31 August 2018

Responsible division

Division for Housing, Property, Spatial and Agricultural Statistics

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 5 cm at breast height (1.3 metre above ground level).

### **Annual increment, forest**

Annual increment in volume in standing forest inside bark.

### **Development class**

Describes the forest's development class from non-regenerated forest to old forest.

### **Site quality**

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 H40-system is based upon the top height (the average 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 m above ground level).

Standard classifications

[Classification of productive forest area by development class](#)

[Classification of productive forest area by site quality \(H40\)](#)

## Administrative information

### Regional level

The results are mainly published at region level.

### Frequency and timeliness

The results are published yearly. The National Forest Inventory has an inventory cycle of five years. From 1994 the assessment is running. A new result based on the registrations from the last 5 years can always be estimated for the regions and for the country

### International reporting

International reporting of results from The National Forest Inventory are reported by the The Norwegian Institute of Bioeconomy Research.

### Microdata

Microdata are stored by The National Forest Inventory.

## Background

### Background and purpose

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.

### 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.

#### Equal treatment of users

No external users have access to the statistics and analyses before they are published and accessible simultaneously for *all users* on [ssb.no](http://ssb.no) at 8 am. Prior to this, a minimum of three months' advance notice is given in the [Statistics Release Calendar](#). Read more about [principles for equal treatment of all users](#) on [ssb.no](http://ssb.no).

#### Coherence with other statistics

Statistics Norway has estimated the productive forest area in The Sample Surveys of Agriculture and Forestry 2004 and 2008, The Census of Agriculture and Forestry 1979 and 1989. The Farm Register of the Norwegian Agricultural Authority also contains information about productive forest area at property level. Total productive forest area based on the Farm Register is published in the annual structural statistics of forestry.

#### Legal authority

Not relevant

#### EEA reference

Not relevant

### **Production**

#### Population

The statistics include all counties except Finnmark, however Finnmark will also be surveyed during the present five-year cycle. As from the inventory cycle 2005-2009, areas above the coniferous forest line are also included. Protected or other closed-off areas of productive forest are not included.

The figures are published annually.

#### Data sources and sampling

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.

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.

#### Collection of data, editing and estimations

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  $3 \times 10^{-5}$  of the surveyable area.

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.

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.

Seasonal adjustment

Not relevant

Confidentiality

Figures on property level are not published.

Comparability over time and space

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

## Accuracy and reliability

Sources of error and uncertainty

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.

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.

Revision

Not relevant