

**Documentation of statistics for
Forest Accounts 2020**

1 Introduction

The forest accounts are accounts for the Danish forests as a natural resource. The accounts comprises the forest land as well as the wood (timber) resource. The forest accounts were first published in 2017, as part of the Green National Accounts for Denmark. In 2021, the accounts have been extended back in time so all data series start in 1990.

2 Statistical presentation

The stock account for forests is an annual account of the Danish forest area (as reported under Kyoto LULUCF) and the growing stock in the forests. The accounts contain opening and closing stocks as well as balancing items. For growing stocks, the accounts are in physical units (cubic metres) as well as monetary units (DKK). The forest area is accounted only in physical units (square km). The accounts are published in the StatBank as well as in general publications from the Green National Accounts.

2.1 Data description

The stock account for forests is an annual account of the Danish forest area (as reported under Kyoto LULUCF) and the growing stock in the forests. The accounts contain opening and closing stocks as well as balancing items. For growing stocks, the accounts are in physical units (cubic metres) as well as monetary units (DKK). The forest area is accounted only in physical units (square km). Data for the accounts are mainly from the National Forest Inventory carried out by the Department of Geosciences and Natural Resource Management, University of Copenhagen. The accounts are published the StatBank as well as in general publications from the Green National Accounts.

2.2 Classification system

The areas are the 5 administrative regions of Denmark. Species of wood is categorized into two groups: broadleaves and conifers.

2.3 Sector coverage

Not relevant for this statistics.

2.4 Statistical concepts and definitions

Forest area (Kyoto): Land classified and mapped as forest, cf. guidelines for reporting on land cover under the Kyoto-protocol (LULUCF). This is based upon UN FAO forest definition, where forest is defined as woody vegetation that has a cover of at least 10% in an areas of more that 0.5 ha and at least 20 m wide, that can exceed 5 m at maturity.

Growing stock: Growing stock is the living part of the volume of standing trees, above stump measured over bark to the top. Includes all trees regardless of diameter, tops of stems, and large branches. Excludes small branches, twigs and foliage. It is measured in cubic metres.

Broadleaves: Broadleaved species of wood are in Denmark mainly beech, oak, ash, sycamore maple and birch. A broadleaved tree is any tree within the diverse botanical group of angiosperms which has flat leaves and produces seeds inside of fruits

Conifers: Conifers are cone-bearing, seed plants. Conifers in Danish forest are mainly Norway spruce, Sitka spruce, Pine, Noble fir and other types of fir.

Revaluation: In the monetary account for growing stock, the item revaluation covers those changes in the stock (measured in Danish kroner) that are caused by changes in prices from one year to the next.

2.5 Statistical unit

Not relevant.

2.6 Statistical population

All forest in Denmark, as measured in the National Forest Inventory.

2.7 Reference area

Denmark.

2.8 Time coverage

1990-

2.9 Base period

Not relevant.

2.10 Unit of measure

Forest land is measured in square kilometers. Growing stock (timber/wood) is measured in cubic metres. The value of the resources is measured in millions DKK.

2.11 Reference period

Opening stocks are per January 1, closing stocks per December 31. The reference period for the changes in stocks is the calendar year (the time between opening and closing stock).

2.12 Frequency of dissemination

Annual.

2.13 Legal acts and other agreements

Data are collected from other institutions, there is no separate data collection for these accounts. No EU regulation governs the stock accounts.

2.14 Cost and burden

Statistics Denmark does not collect data for this statistics, so there is no direct response burden associated with this statistics.

2.15 Comment

Stock accounts for forests are presented on the topic page [Natural resources](#).

3 Statistical processing

Data from the sources are collected and brought together. A certain harmonisation of data is done, across sources and across years to create complete and consistent accounts. A simplified net present value method where the value of the stock is obtained by multiplying the current volume of standing timber by its stumpage price, assuming the rate of discount is equal to the natural growth rate.

3.1 Source data

The stock accounts for forests are build on a number of sources:

- The [Danish National Forest Inventory](#)
- The Danish reporting on forest land under Kyoto (LULUCF). This is available at [UNFCCC](#).
- The statistics on felling in Danish forest, documented [here](#)
- Market prices on timber products, collected from the Danish Forest Association

3.2 Frequency of data collection

The source data are collected annually.

3.3 Data collection

No primary data collection takes place for the stock accounts for forests. All sources are existing statistics or data collected for other purposes. For information on the data collection for these sources, please see the documentation provided in the section on 'Source Data'.

3.4 Data validation

When the accounts are produced, data from the different are combined and thus compared. This leads to a 'plausibility control' across the different sources.

3.5 Data compilation

Data from the sources are collected and brought together. A certain harmonisation of data is done, across sources and across years to create complete and consistent accounts. The physical account for forest land is created as an extract of the relevant data from the Kyoto reporting on land cover changes (LULUCF).

The physical account for growing stock uses data on the growing stock from the national forest inventory for the stock (opening and closing), as well as for the net increment. Data on fellings from Statistics Denmark's survey is adjusted to account also for other reductions in stock (mortality, losses, underreported felling). Gross increment is then calculated as net increment plus felling and other reductions.

The monetary account for growing stock is built on the physical accounts. The valuation method used is the stumpage price method. This is a simplified net present value method where the value of the stock is obtained by multiplying the current volume of standing timber by its stumpage price, assuming the rate of discount is equal to the natural growth rate. The stumpage prices are estimated from road side market prices, deducting costs of felling and transport. A number of assumptions and corrections are made.

3.6 Adjustment

The collected market prices are smoothed to ensure that changes from one year to the next are less marked. This is justified by the consideration that valuation of the stock should not be fully influenced by a single year's fluctuations in market prices for timber products.

4 Relevance

The stock accounts for forests are of relevance for administrative bodies, researchers, NGOs, businesses, the educational sector and individuals - all with interests in natural resources, economic-environmental interactions, natural capital, sustainability etc.

4.1 User Needs

Users are administrative bodies, researchers, NGOs, businesses, the educational sector and individuals - all with interests in natural resources, economic-environmental interactions, sustainability etc.

4.2 User Satisfaction

The plans for the statistics are discussed with expert users in the user committee for economic-environmental statistics and accounts, [material in Danish only](#).

4.3 Data completeness rate

There is no EU regulation for this statistics. The forest accounts are produced following SEEA-CF, the UN statistical standard for environmental-economic accounts. Compared to a complete set of forest accounts, cf. SEEA-CF, the Danish forest accounts are lacking an account of the value of forest land. It has not (yet) been possible to produce these with sufficient validity based on available data.

5 Accuracy and reliability

The stock accounts for forest are reliable estimates of the physical size of the resources, as well as the change in these over a number of years. Smaller variations from one year to the next may however reflect uncertainties rather than real changes. Especially for the monetary evaluation of the growing stock there are significant error sources, both in the prices used as well as inherent in the method used which is based on a number of assumptions. The estimate for the value of the growing stock should therefore be considered a provisional estimate of the order of magnitude.

5.1 Overall accuracy

The stock accounts for forest are reliable estimates of the physical size of the resources, as well as the change in these over a number of years. Smaller variations from one year to the next may however reflect uncertainties rather than real changes. Especially for the monetary evaluation of the growing stock there are significant error sources, both in the prices used as well as inherent in the method used which is based on a number of assumptions. The estimate for the value of the growing stock, and especially the changes in value from year to year, should therefore be considered provisional estimates of the order of magnitude. The estimate is very sensitive to changes in a number of assumptions made in the valuation.

5.2 Sampling error

The stock accounts are not directly based on a sample, and thus sample error for the accounts cannot be estimated. However, the main source for the account concerning growing stocks is the National Forest Inventory (NFI), which is sample-based. Description of the sample design and estimation of the sample error is available through the documentation of the NFI, see more under 'Source data'.

5.3 Non-sampling error

5.4 Quality management

Statistics Denmark follows the recommendations on organisation and management of quality given in the Code of Practice for European Statistics (CoP) and the implementation guidelines given in the Quality Assurance Framework of the European Statistical System (QAF). A Working Group on Quality and a central quality assurance function have been established to continuously carry through control of products and processes.

5.5 Quality assurance

Statistics Denmark follows the principles in the Code of Practice for European Statistics (CoP) and uses the Quality Assurance Framework of the European Statistical System (QAF) for the implementation of the principles. This involves continuous decentralized and central control of products and processes based on documentation following international standards. The central quality assurance function reports to the Working Group on Quality. Reports include suggestions for improvement that are assessed, decided and subsequently implemented.

5.6 Quality assessment

No formal quality assessment of the accounts has been carried out.

5.7 Data revision - policy

Statistics Denmark revises published figures in accordance with the [Revision Policy for Statistics Denmark](#). The common procedures and principles of the Revision Policy are for some statistics supplemented by a specific revision practice.

5.8 Data revision practice

Normally the accounts are revised 1 year back with each publication of one new year as this allows using the final version of all data sources. The stock accounts may also be revised if the sources are revised significantly, so as to ensure the consistency with published forest statistics etc.

6 Timeliness and punctuality

The accounts have always been published at the preannounced date.

6.1 Timeliness and time lag - final results

Publication is at t+18 months. Data for the most recent year are preliminary and will be revised with the next year's publication.

6.2 Punctuality

The statistics have only been released once, on time as announced.

7 Comparability

The stock accounts for forests are compiled according to the guidelines for asset accounts for natural resources from the UN statistical standard 'Systems of Environmental-Economic Accounts'. This ensures a high degree of comparability with the same type of accounts from other countries using this standard. The stock account is fully comparable across the published time series.

7.1 Comparability - geographical

The stock accounts for forests are compiled according to the guidelines for asset accounts for natural resources from the UN statistical standard [Systems of Environmental-Economic Accounts](#). This ensures a high degree of comparability with the same type of accounts from other countries using this standard.

7.2 Comparability over time

The stock account is fully comparable across the published time series.

7.3 Coherence - cross domain

The stock accounts are comparable to the National Forest Inventory when it comes to the data on growing stock. The area of forest land is the same in the resource accounts as in the Danish Kyoto-reporting. There are other data on forest land in the NFI, but these are not entirely comparable over time. In most recent years, the difference is very small. Statistics Denmark also publishes data on land covered with forest as part of our [land accounts](#). In this account, the area with forest land is smaller. The reasons are related to different sources as well as to different definitions. In the land accounts, temporarily unstocked land, land for forest roads as well as land with Christmas trees are not included in forest land.

7.4 Coherence - internal

Full internal consistency has been ensured during the production of the accounts.

8 Accessibility and clarity

The stock account for forests is available in its most detailed form through the <http://www.StatBank.dk>. General results are communicated through Statistics Denmark's various publications covering the Green National Accounts for Denmark. See also the web site for [Natural resources](#).

8.1 Release calendar

The publication date appears in the release calendar. The date is confirmed in the weeks before.

8.2 Release calendar access

The Release Calendar can be accessed on our English website: [Release Calendar](#).

8.3 User access

Statistics are always published at 8:00 a.m. at the day announced in the release calendar. No one outside of Statistics Denmark can access the statistics before they are published.

8.4 News release

Newsletter (Nyt fra Danmarks Statistik, in Danish only), available at [this page](#).

8.5 Publications

The stock account for forests are presented in the publication [Green National Accounts for Denmark](#).

8.6 On-line database

The statistics are published in the StatBank under the subject [Naturressourcer](#) in the following tables:

- SKOVRG01
- SKOVRG02
- SKOVRG03

8.7 Micro-data access

Micro-data are not available in Statistics Denmark.

8.8 Other

Nothing else.

8.9 Confidentiality - policy

Statistics Denmark's data confidentiality policy.

8.10 Confidentiality - data treatment

No measures have been needed to ensure confidentiality, as data in the stock account do not refer to specific businesses or persons.

8.11 Documentation on methodology

No further documentation has been published by Statistics Denmark. The main source, the National Forest Inventory, is documented in separate reporting by the University of Copenhagen. English version available [here](#).

8.12 Quality documentation

Results from the quality evaluation of products and selected processes are available in detail for each statistics and in summary reports for the Working Group on Quality.

9 Contact

Administratively, the accounts belong to the unit National Accounts. The person responsible is Ingeborg Vind, +45 3917 3329, inv@dst.dk

9.1 Contact organisation

Statistics Denmark

9.2 Contact organisation unit

National Accounts, Economic Statistics.

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