

**Documentation of statistics for  
Water and Waste Water 2023**

## 1 Introduction

The statistics concerning water and waste water estimates the abstraction and use of water as well as discharge of waste water distributed on municipalities.

The water account document abstraction of water, use in households and industry groups (as used in the Danish National Accounts) as well as the discharge of waste water via waste water treatment plants to the aquatic environment. The water accounts are based on water and waste water statistics as well as micro-data from the Jupiter database managed by GEUS (Geological Survey of Denmark and Greenland) and reports on point sources from the Danish Environmental Protection Agency.

The economic water account document the income in water supply and waste water treatment plants from households and industry groups. The account is based price information from water supply and waste water companies that are member of DANVA, information on individual companies, population, households as well as the physical water account.

## 2 Statistical presentation

The water account consist of a physical and an economic part. The physical water account document abstraction of water, use well as the discharge of waste water to the aquatic environment in households and 117 industry groups as used in the other parts of the environmental economic account and in the ordinary Danish National Accounts. The economic water account document the income in water supply and waste water treatment plants from households and industry groups. The water accounts are prepared annually and published in Latest releases from Statistics Denmark and in StatBank Denmark.

The water account is a module in the environmental economic accounts for Denmark. Read about the [environmental economic accounts](#).

### 2.1 Data description

The water account is a part of the environmental economic accounts for Denmark. The water account describe the flows of water into the economy (abstraction and distribution of groundwater), between industrial groups in the economy, and from the economy to the environment (from households and industrial groups to sewerage or directly to the aquatic environment).

The economic water account document the income in water supply and waste water treatment plants from households and industry groups. The distribution of companies between industrial groups has been done according to the 117 group classification used in the other parts of the environmental economic account and in the ordinary Danish National Accounts. The account is annually and published primarily in Latest releases from Statistics Denmark and in StatBank Denmark.

### 2.2 Classification system

The industry groups are the same as in the Danish National Accounts. These are based on [the national version of NACE rev. 2](#) , with a limited number of deviations.

### 2.3 Sector coverage

All sectors, incl. households, are covered.

## **2.4 Statistical concepts and definitions**

Overfladevand: Ferskvand fra vandløb, søer o.l.

## **2.5 Statistical unit**

The local unit is used for distribution to industry groups.

## **2.6 Statistical population**

The population consists of all production units (local units) in Denmark.

## **2.7 Reference area**

Denmark.

## **2.8 Time coverage**

Water accounts: 2010-

## **2.9 Base period**

Not relevant for these statistics.

## **2.10 Unit of measure**

Water and waste water volumes are measured in 1000 m<sup>3</sup>. Nitrogen (N), Phosphorus (P) and Organic matter (BOD<sub>5</sub>) are measured in tons. The income from water supply plants and waste water treatment plants is measured in mill. kr.

## **2.11 Reference period**

01-01-2010 - 31-12-2023

## **2.12 Frequency of dissemination**

Annual.

## **2.13 Legal acts and other agreements**

Data are collected by other public authorities and no separate regulation is required for Statistics Denmark. Law on Statistics Denmark (§6) regulates the access of Statistics Denmark to data from administrative sources.

## **2.14 Cost and burden**

Based on administrative data. There is no burden on respondents from Statistics Denmark.

## **2.15 Comment**

Water and waste water statistics are presented on the subject page [Water and Waste water](#).

## **3 Statistical processing**

Statistics Denmark prepares water statistics based on data from GEUS on abstraction of water and waste water statistics based on data from the Danish Environmental Protection Agency. The distribution of abstraction of water, use of water and discharge of waste water between industrial groups as well as the cost are based on a number of additional sources.

### **3.1 Source data**

Annually a specified data set from the Jupiter database is received from GEUS. The data set is used for preparation of statistics on abstraction of groundwater and surface water. The complete database is also downloaded to get micro-data for use in distribution in industry groups.

Annually a specified data set from the PULS database is received from the Danish Environmental Protection Agency. The data set is used for preparation of waste water statistics.

Annually information on prices on water supply and waste water treatment is obtained from DANVA (Dansk Vand- og Spildevandsforening).

Environmental reports from specific companies are also used for preparation of the water accounts.

### **3.2 Frequency of data collection**

Annual.

### **3.3 Data collection**

Data is not collected by Statistics Denmark.

Data on extraction of water obtained as a database (Jupiter) from GEUS / received by e-mail from GEUS in Excel format. Data on discharge of waste water to recipient is obtained by e-mail from the Danish Environmental Protection Agency. Data on prices on water supply and waste water treatment is obtained from DANVA.

### **3.4 Data validation**

Data received by Statistics Denmark from other authorities are already quality assured to a certain degree. Preparation of the water accounts cause further validation of data and also validation between different sources. Statistics Denmark therefore corrects data in dialogue with data suppliers.

GEUS validates data in the Jupiter database before publishing in the annual report Groundwater - status and development 1989 - . However, examination of the data shows non consistent time series. The consistency is improved. Regarding reimbursement data the consistency is also improved.

The Danish Environmental Protection Agency validates data in the PULS database before publishing the annual report on Point sources.

Information on prices on water supply and waste water treatment are compiled by DANVA among members. Missing values are estimated to get complete time series.

### **3.5 Data compilation**

#### **Water**

The water account is based on the total abstracted amount of groundwater and surface water and the total discharge of waste water. Source data from the Jupiter database is used for distribution of abstracted ground water and surface water. For agriculture, aqua culture and other industries with own water abstraction the amount of water is allocated to the relevant industrial group. The 117 industrial groups from the national accounts are used for distribution.

The delivery from the water supply companies are corrected for loss in the abstraction and loss in the delivery to the end user. The delivered amount of water is distributed between households and industrial groups in an iterative process. Information on tax refunds are used for distribution between industrial groups. Figures from DANVA is used for estimation of consumption in households. The remaining amount of water is allocated to public institutions by use of key numbers as number of employees.

Based on price information for water supply plants compiled by DANVA an average price for water has been estimated. Based on water consumption the payment for households and industrial groups can be calculated. The payment is adjusted against the overall income in the water supply sector..

#### **Waste water**

The amount of waste water generated in the different industrial groups are estimated based on assumptions on water contained in products, evaporated etc. The assumptions on water contained in products and evaporation is based on information in the report Vandforbrug i fremstillingsindustrien (Water consumption in the industry; Environmental Project no. 259 from 1994) supplemented with up to date company specific information. The information on own discharge from companies are included in an overall assessment of the use of water and discharge of waste water in the industrial groups.

The water account is balanced by using information on the total discharge from waste water treatment plants and estimated percolation of groundwater to the sewerage and estimated contribution by rain water.

Based on information from DANVA on prices for waste water treatment an average price has been estimated. The cost for households and industrial groups is calculated from consumption and the average price. For 2014 and onwards a price reduction for major consumers has been implemented.

### **3.6 Adjustment**

No corrections have been made except as described under data validation and data processing.

## **4 Relevance**

Water accounts and statistics are of relevance for administrative bodies, researchers, NGOs, businesses, the educational sector and individuals - all with interests in water, pollution, resources, economic-environmental interactions, etc. To ensure international comparability, the waste accounts are prepared according to the UN statistical standard SEEA (System of Environmental-Economic Accounting) 2012.

#### **4.1 User Needs**

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

#### **4.2 User Satisfaction**

The statistics and accounts have been presented for expert users in the user committee for economic-environmental statistics and accounts, [contact for economic statistics and accounts](#) (only in Danish).

#### **4.3 Data completeness rate**

The statistics are not covered by regulation.

### **5 Accuracy and reliability**

The coverage of data abstraction water is assessed to be high. However, for fish farming the information may be insufficient. Therefore missing values have been imputed.

The coverage of data on waste water discharge is assessed to be high, as the information by law has to be included in development water management plans.

The coverage of data on abstraction of water, flows and deliveries to end users is assumed to be high.

The distribution on industrial groups - especially the 117 level - is subjected to some uncertainty.

#### **5.1 Overall accuracy**

The overall uncertainty has not been subjected to a quantitative assessment.

The coverage of the data concerning abstraction of water, flows in the water supply system and discharge of waste water is assumed to be high, subject to delayed or incorrect reporting by the users. Obvious errors are corrected in dialogue with the administrators of the databases.

The distribution on industrial groups - especially the 117 level - is subjected to some uncertainty.

#### **5.2 Sampling error**

Not relevant for these statistics.

#### **5.3 Non-sampling error**

The source data in both Jupiter and PULS databases contain measurement errors. They are not all identified in the data validation. It may be typing errors, errors in the units, missing reporting or reporting in wrong fields. The latest years may be underestimated due to late reporting.

#### **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**

The coverage of the data concerning abstraction of water, flows in the water supply system and discharge of waste water is assumed to be high, subject to delayed or incorrect reporting by the users. Obvious errors are corrected in dialogue with the administrators of the databases.

The distribution in industrial groups can be subject to uncertainty. The information on reimbursement water tax for companies and institutions subject to VAT is assumed to be complete. The information on floor space from the BBR (Danish Building and Housing Register) is found not to be complete for all the relevant public institutions. The number of employees has therefore been included in the estimates. No overall information on water content in products, evaporation of water from processes etc. is available from the recent years. Therefore the report Vandforbrug i fremstillingsindustrien (Water consumption in the industry; Environmental Project no. 259 from 1994) supplemented with up to date company specific information.

#### **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**

The water accounts are continuously improved when new data sources are available. Data series for e.g. water extraction or water consumption are completed if it can be validated by activity in the specific companies.

### **6 Timeliness and punctuality**

The statistics as well as physical and economic accounts have been published on time 11 months after the end of the reference period.



## **6.1 Timeliness and time lag - final results**

Publication 11 months after the end of the reference period.

## **6.2 Punctuality**

Publication on pre-announced time.

## **7 Comparability**

The methods and data sources for the Water Accounts are unchanged throughout the period covered by published figures (2010-). International comparison is possible with all other national water accounts based on UN's statistical standard SEEA 2012.

### **7.1 Comparability - geographical**

Water Accounts are produced according to SEEA 2012, the UN statistical standard for environmental economic accounts, and therefore comparable to water accounts from other countries using this standard.

### **7.2 Comparability over time**

There is full comparability over time since 2010, the start year for the present statistics.

Statistics Denmark has also for the period 1995-2005 published [water accounts](#). These earlier series are not fully comparable to the present series - the industry groupings have changed, and also the source data and methods are changed.

### **7.3 Coherence - cross domain**

The water accounts by industry are part of the Danish green national accounts, which are compiled using the same classifications as the national accounts, ensuring consistency and comparability to economic data. Therefore, the figures are suitable for comparisons with other parts of the environmental-economic accounts (e.g. emissions to air, generation of waste, energy consumption) as well as figures from the national accounts.

### **7.4 Coherence - internal**

Full internal consistency.

## **8 Accessibility and clarity**

The statistics are published in News from Statistics Denmark and in the Statbank. They will also be part of future publications from Statistics Denmark on Environmental-Economic Accounts (Green National Accounts).

### **8.1 Release calendar**

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

### **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.

### **8.2 Release calendar access**

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

### **8.4 News release**

The statistic will be published in [News from Statistics Denmark](#) (only in Danish).

### **8.5 Publications**

Water and waste water will be included in future publications from Statistics Denmark on environmental-economic accounts (green national accounts).

### **8.6 On-line database**

The statistics are published in the StatBank under the subject [Water and waste water](#) in the following tables:

- [VANDIND](#): Abstraction of water by region, water type, Abstraction category and time
- [VANDRG1](#): Abstraction of water (Physical water accounts) by industry, water type and time
- [VANDRG2](#): Consumption of water (Physical water accounts) by industry, water type and time
- [VANDRG3](#): Consumption of water (Monetary water accounts) by industry, unit and time
- [VANDUD](#): Discharge of water by region, discharge, farm type and time
- [VANDRG4](#): Discharge of wastewater (Physical water accounts) by industry, discharge and time
- [VANDRG5](#): Discharge of wastewater (Monetary water accounts) by industry, unit and time

### **8.7 Micro-data access**

No availability of micro-level data for researchers.

### **8.8 Other**

The Jupiter database is available from [GEUS](#). Data regarding waste water point sources is available [National Environmental Protection Agency](<https://eng.mst.dk/>). Information on prices for water supply plants and waste water treatment is available from [DANVA](#).

### **8.9 Confidentiality - policy**

Statistics Denmark's general policy on [data confidentiality](#) (in Danish only) has been followed.

### **8.10 Confidentiality - data treatment**

No specific measures have been needed to ensure confidentiality.

### **8.11 Documentation on methodology**

No further documentation has been published by Statistics Denmark.

### **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**

The administrative placement of these statistics is in the division of National Accounts, Climate and Environment. The contact person is Michael Berg Rasmussen, tel.: + 45 5146 2315, and e-mail: [MBR@dst.dk](mailto:MBR@dst.dk).