

**Documentation of statistics for  
Account Statistics for Fishery 2019**

## **1 Introduction**

The purpose with the Account Statistics for fishery is to review the economy of the fishery sector. The Statistics is used in economic models and as a basis for yearly economic statistical reports for the fishery to EU (DG Mare). The statistic has been produced by Department of Food and Resource Economics at University of Copenhagen since 1996 and was transferred to Statistics Denmark from January 2009.

## **2 Statistical presentation**

The Account Statistics for Fishery covers the commercial fishery by fishing vessels registered in Denmark. The statistics is based on vessel units and is calculated for groups of fishing vessels (fleet segments) based on vessel size and main gear use.

### **2.1 Data description**

The Account statistics for fishery specify the factor input, production and sales revenue (value of landings), costs and operating profit, together with assets, liabilities investment and financing. The results are calculated as totals and per vessel unit. The statistic is presented for the whole population, for vessel length groups, and for vessels grouped by length and fishing type.

### **2.2 Classification system**

The statistics is grouped by length and by combinations of length and fishing type.

The length groups are: less than 12 m / 12.0-14.99 m / 15.0-17.99 m / 18.0-23.99 m / 24.0-39.99 m / 40 m and above

The fishing types are: Netters / Danish seiners / Trawlers / Combined Net/Seine/Trawl / Industrial trawlers / Consumption Trawlers / Mixed Trawl / Purse Seine / Shrimpers / Mussel dredgers

### **2.3 Sector coverage**

The Account Statistic covers commercial fishery by fishing vessels registered in Denmark. All company owned and personally owned fishing vessels are included. For the Danish national statistic a threshold is used to separate less active vessels from the population.

## 2.4 Statistical concepts and definitions

Degree of profitability: Operating profit minus Remuneration to owners as per cent of the average Fixed assets for the year.

Assets: Fixed assets and financial assets. Fixed assets are measured by net book value, which is basically the difference between the historical cost of the asset and its associated depreciation. An exception is the value of fishing rights which is calculated using yearly estimated shadow prices for each fish species/quota stocks. Calculation of the capital value of fishing rights have been subject to changes from the first handing out of individual quotas to fishing firms (VQS vessel quota shares).

Gross output: Gross output consist mainly the total value of the production (value of landings) but include also other fishery income such as additional payment from co-operative enterprises. payment between partners in case of pair trawling, subsidies for instance due to temporary decommission, compensation for participation in research fishery, or income from rent out of quotas within the year.

Other sources includes secondary fishing income such as leasing or rent out of vessels or other operative assets, salvage money etc. Provisions (fish for own consumption) is calculated for owner and crew.

Costs: Costs include fuel, ice, provisions and stores, landings and sales costs, rent, insurance and administration etc., maintenance, depreciations and wage expenses.

Net profit: Net profit is the result after financial expenses and company taxes. Net profit provide remuneration to owners and return on net capital.

Investment: Investment for the year, purchase minus sale of fixed assets.

Operating margin: Operating profit minus Remuneration to owners as a per cent of Gross output

Liabilities: An accounting expression for how the assets are financed.

Operating profit: Gross output minus Cost (operating expenses) = Result before Financial expenditures.

Solvency: Net capital (Owner's equity) as per cent of Total assets, end of year.

## 2.5 Statistical unit

The statistical unit is a production unit, that might contain one ore more vessels with the same owner. The production unit has to have a gross output that is larger than the threshold, for the statistics. If the owner has more than one vessel above the threshold, the vessels will form separate production units.

## **2.6 Statistical population**

The population covers 98 per cent of the total value of Danish fishery. The population is cut off by a threshold on minimum value of catches for the year. From the accounting year 2012 the threshold has been fixed at DKK 270,000 (approx. EUR 36,270).

Before 2012 the threshold has been calculated from a combined weighted index (Fishers Index) based on three years average price on 45 fish species. The threshold for the years 1996 to 2011 in DKK: 149880, 158715, 178755, 191055, 195600, 201090, 219195, 230280, 224340, 216735, 229050, 252720, 261795, 245880, 254550, 271305. The total revenue for the individual unit measured in Standard Catch Value (= quantity multiplied by average price) determine whether a unit is included in the population for the year.

## **2.7 Reference area**

Denmark.

## **2.8 Time coverage**

Account statistics for Fishery is available on StatBank Denmark from 2009 onward. Earlier years (1996-) is available on StatBank Denmark archive.

## **2.9 Base period**

Not applicable.

## **2.10 Unit of measure**

Different units for different variables. Economic variables in Danish crown DKK. Factor input: Vessel capacity in Gross tonnage and over all length in meters. Diesel oil in liters. Effort and labour in Days at Sea and Man\*hour. Catches in kilogram (live weight)

## **2.11 Reference period**

Reference period is the calendar year.

## **2.12 Frequency of dissemination**

Yearly.

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

The Ministry of Food, Agriculture and Fisheries has the authority given by the Danish Fisheries act to collect the data, and have by agreement of April 23rd 2009 delegated the compilation of the statistics to Statistics Denmark.

Council Regulation (EC) no. 199/2008 (former Council Regulation (EC) no. 1543/2000) on collection of economic data for fisheries. Commission Regulation no. 665/2008 specify the detailed rules for application. Before 2008 rules for application is specified in Commission Regulation no. 1639/2001 with revisions in Commission Regulation no. 1581/2004.

### **2.14 Cost and burden**

An individual cost of participation has not been estimated, as participation is optional. The accounting form is completed by the fisherman's accountant, who is guaranteed a fixed compensation for each completed account.

### **2.15 Comment**

Continued from 2.05 Statistical unit: The account for a unit covers all economic activities during the operating year for the production unit, also for production units (vessels) that have shared ownership (joint owners/partners).

Production units with yearly revenue less than the threshold and units that are registered active less than six months during the year are placed in the residual population, for which no collection of accounts take place. Register data is available for all units in the residual population, and those are used for calculation of complementary data to produce the yearly Fleet Economic Report to EU (DG Mare). The Regulation on collection of fishery data does not permit use of threshold; therefore all production units must be included in the report, even units which have landed fish for only a few EUR.

For further information contact Statistics Denmark.

## **3 Statistical processing**

The authorized accountants report yearly the account for their fishery client. The collected accounts are thoroughly tested. When all accounts has been approved for statistical use, the sample of approved accounts are used together with register data for the entire population to simulate individual accounts for all units not in the sample.

The complete dataset with individual balanced accounts for all units in the population is then merged with register data on vessel characteristics, gear use etc. in order to calculate parameters for statistical groups (vessel segments).

### 3.1 Source data

The economic data is collected using a harmonized electronic accounting form to be completed by the fisherman's accountant. The administrative registers in The Danish Fisheries Agency constitutes the basis for the construction of accounting units, arranging and stratification of the population, selection of the sample, and raising from sample to population.

Statistics Denmark receives data on production, production technicalities and ownership for each version of a registered fishing vessel, when landings for the year has been fully registered. These data is used for construction of the accounting units and if needed separating into vessel units.

A complementary source is logbook data, which is prepared and quality controlled by the DTU/Aqua. The logbook data is used for calculating effort and labour input.

From 2012 data on transaction of FKA (vessel quota shares) and IOK (individually transferable quotas) registered by The Danish Fisheries Agency has also been used for calculating the capital value of fishing rights in the individual accounts.

### 3.2 Frequency of data collection

Yearly.

### 3.3 Data collection

The fishery accounts are collected on a harmonized accounting form completed by the fisherman's accountant. Participation in the statistic is in principle voluntary, in the sense that the fisherman beforehand has agreed to allow his accountant to report the economic data. The list of fishermen who has accepted to participate is continuously updated by Statistics Denmark. Each year the 100 biggest fishing firms are contacted through their accountant and by The Danish Fishermen's Association, in order to allow their accountant to report the economic data, if they are not already on the list.

The accounting form can be found in [Danish](https://www.dst.dk/da/Statistik/emner/erhvervslivets-sektorer/fiskeri-og-akvakultur/fiskeri-og-akvakulturs-regnskaber.aspx) <https://www.dst.dk/da/Statistik/emner/erhvervslivets-sektorer/fiskeri-og-akvakultur/fiskeri-og-akvakulturs-regnskaber.aspx>) under the head of "Indberetning".

### 3.4 Data validation

The fishery accounts are filled in a harmonized accounting form on a Excel file. The spread sheets are functionally connected and include both dynamic test on data entry and complementary test routines for control of relations between variables. Data is validated, and tested in the spread sheets by the accountant before reporting.

After reporting the data is checked for consistency with the harmonized accounting form. Misplaced data is corrected, and in case of errors, or missing data the reporting accountant is asked for necessary corrections. In addition the data is compared with register data on production and vessel characteristics. In case of mismatch the reporting accountant is contacted for clarification, and corrections will be made to secure coherence between the accounting unit and the unit in the population.

The Accounting form is available in [Danish](#) under the head of "Indberetning".

### **3.5 Data compilation**

Corrected and finalized accounts are imported to a SAS file and merged with register data. Individual accounts are then simulated for all units that are not included in the sample. That is done using a SAS program Proc MassImputation from the BANFF package. The program finds the nearest donor using a standardized relative measurement based on selected criteria parameters. That is repeated three times with selection of criteria parameters (for instance different species composition). The resulting three donors are used in calculating an average account. Finally the economic variables in the average account is scaled by a factor to ensure that the revenue in the resulting balanced account match registered total revenue (value of catch) for the simulated unit.

### **3.6 Adjustment**

The reported values of fishing rights in the finalized balanced accounts are replaced by computed values based on registered quota shares and calculated shadow prices. The difference between reported and computed capital values are balanced out against adjustment in Net capital (Own equity) and deferred tax. For corporate ownership the distribution between Net capital and deferred tax is 75/25, whereas for personally owned enterprises a 50/50 distribution is used.

## **4 Relevance**

The account statistic is relevant for the Ministry of Environment and Food, the AgriFish Agency, the fishing industry and researchers with interest in fishery economics. The statistics is used in the yearly report Economic Situation of the Danish Fishery, published by Department of Food and Resource Economics. Furthermore the data is used in the Fleet Economic Report to EU. Council Regulation no. 199/2008.

### **4.1 User Needs**

Users of the statistics are The Ministry of Food Agriculture and Fisheries, The Danish Fisheries Agency and other administrative authorities, EU, Fishery Associations and enterprises related to fisheries for instance credit institutions. Research Institutes together with Danish and foreign students and researchers. Data from the statistics is used by the Department of Food and Resource Economics (IFRO) at the University of Copenhagen in the forecasting model for Economic Situation of the Danish Fishery (yearly report). Furthermore the data form the basis of the Report of economic data for Fishery to EU. Council Regulation no. 199/2008.

### **4.2 User Satisfaction**

The statistic is produced by commission from the Danish Ministry of Food, Agriculture and Fisheries. An advisory committee has been established for the purpose to attend the need of the users and to maintain the quality of the statistics. The committee includes representatives from The Ministry of Food, Agriculture and Fisheries, The Danish Fisheries Agency, Department of Food and Resource Economics and DTU/Aqua.

### **4.3 Data completeness rate**

The account statistics is not sufficient for producing all variables in the Fleet Economic Report to EU. Transversal variables with information on fishing activity and catches by species, gear use, and area are produced and reported by DTU/AQUA.

## **5 Accuracy and reliability**

The statistic is based on a sample and the results are uncertain. The precision rely on the covering of the sample. Therefore the sample rate is bigger for vessels with high revenue. The aim is each year to include the 100 biggest vessels in the sample, and that 80 per cent of the total value of landings in Danish fishery come from the vessels in the sample.

Investments have the most uncertainty, because exchange of a vessel could result in closure of the fishing firm, and set up a new firm to run the new vessel.

### **5.1 Overall accuracy**

In general terms the overall quality of the statistic should be evaluated as good. About half of the units in the population are included in the sample, but because the sampling is biased towards the biggest units, more than 80 per cent of the total revenue in Danish fishery is produced by the units in the sample (for 2018 nearly 87 per cent). Data for the remaining 13-20 per cent of the production/revenue is known from the register. Therefore it is only necessary to estimate the cost variables for less than 20 per cent of the total production.

Investment is the most uncertain variable, because replacement of a vessel may lead to closing down of the fishing firm, and the new vessel could then be run by a new fishing firm.

### **5.2 Sampling error**

The main variables production and Gross output comes from administrative registers. There is no sampling error.

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

Estimated data for units not in the sample are calculated by simulating individual accounts. The simulated accounts can not be verified for errors, but the potential errors are relative to the coverage rate for the different statistical groups. For vessels above 24 meter the coverage rate is close to 100 per cent, while from 56 to 87 per cent of the revenue is covered for vessels between 15 and 24 meter. For groups of vessels less than 15 meter between 42 and 64 per cent of the revenue is covered, except mussel-dredgers and multipurpose vessels between 12 and 15 meter for which 32 and 25 per cent of the revenue is covered by the sampled units.

### **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 quality of the collected data should be evaluated as good. The accounting forms are completed by professional accountants, who themselves have interest in the publication of the statistics, and who furthermore get paid for reporting the data. The harmonized accounting form, the tests and thorough examination of the reported accounts, and finally the comparison with register data all together contribute to secure the data quality.

Production and revenue from sales are important variables in the statistics that are registered for all units in the population. Therefore the coverage of the sampled accounts is known. In 2018 the sample covered 87 per cent of the revenue, therefore it was only necessary to estimate the cost for the remaining 13 per cent of the total revenue. The quality of the simulated accounts cannot be calculated (see model assumption error), but the good coverage of the reported accounts indicate, that the error on the estimated variables in the simulated units are less significant in the statistics.

## 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

Originally only final figures have been calculated. But for 2012 and 2013 a two steps model has been used. By which the statistics first were calculated based on the sampled accounts, where the figures in the balance was preliminary, and later the value of immaterial assets was calculated based on registered quota transactions.

## 6 Timeliness and punctuality

Publication before November 30th in the year after the accounting year.

### 6.1 Timeliness and time lag - final results

Publication in NYT from Statistics Denmark before November 30th in the year after the accounting year. At that time the statistic is marked preliminary, because the gear use for each unit should be tested for segmentation according the EU Data Collection Framework. Final figures should be published before the end of the year in Account statistics for Fishery and Aquaculture, but for 2018 the publication will be in February, when the Aquaculture statistics has been finalized.

## **6.2 Punctuality**

Publication before November 30th in the year after the accounting year.

Data for Fleet Economic Report is uploaded to Joint Research Center one month after Data Call. That is usually in the beginning of March.

## **7 Comparability**

The Account Statistics for Fishery is prepared using the same overall principles as the account statistics for agriculture, horticulture and aquaculture.

The statistics has been prepared yearly since 1996. Break in series occurs in 2001 due to inclusion of unpaid salary to active (working) partners, and in 2009 and again 2012 due to improved calculation of the capital value of fishing rights.

### **7.1 Comparability - geographical**

The Account Statistic for Fishery is the basic for the yearly "Fleet Economic Report" sent to Joint Research Center (EU). The reported statistics for all Member States fishing fleets is available on STECF's web-page: [Fleet Economic Performance](#)

The Scientific, Technical and Economic Committee for Fisheries (STECF) publish the statistics in "The Annual Economic Report on the EU Fishing Fleet". The statistics published by STECF cannot be compared directly with the Danish national statistics. Variables in the EU statistics are more aggregated, and the statistical groups (vessel segments) are different from the Danish statistics, furthermore the EU Fleet statistics include units with revenue below the yearly threshold.

## 7.2 Comparability over time

The Account Statistics for Fishery has been prepared yearly since 2001 grouped by vessel segments. For the years 1996 to 2000 the statistics were presented on vessel categories and main production (species) groups.

There is a break in series between 2000 and 2001 due to a change in calculation method. Until 2000 the salary to partners was handled as a cost and subtracted from the profit and the partners ownership share was taken out of the Net capital, but from 2001 are both partners shares included in the Net capital for the firm/production unit, and in the private owner fishing firms are remuneration to both owners included in the operating profit.

Break in series according to improved method for calculation of capital value of fishing rights. From 2009 the capital value of Vessel Quota Shares (VQS) has been calculated based on the registered quota quantity at the end of the year for all owners of fishing rights in the sample using a calculated shadow price. The shadow price for a quota species have been calculated as the marginal augment in contribution margin caused by a one kilo increase in the total yearly landings of that species for a vessel. The contribution margin has been calculated for a 16 year period using a 7 per cent discount rate. Until 2016 the calculation was performed for an 8 year period, which by then was the guarantee period for the quota management system.

From 2012 these calculations have been performed for each fishing firm in the population contrary to the years 2009-2011, where the calculation only was performed for the accounts in the sample, which afterwards were weighted for each of the statistical groups.

All accounts for 2012, both reported and simulated, have the reported values of Individual Transferable Quotas (ITQ) and VQS fishing rights has been replaced with the calculated capital values for the beginning of the year, and the difference between reported and computed capital values are balanced out against adjustment in Net capital (Own equity) and deferred tax.

## 7.3 Coherence - cross domain

The Account Statistics for Fishery is based on the same principles as the Account Statistics for Agriculture and Horticulture.

## 7.4 Coherence - internal

An important task of the data management is to ensure consistence between firms/vessel units in the reported accounts and the units based on the register entities (owners, vessel versions and production data)). Consistency is completed either by adjusting the register based units to the real units in the accounts, or to split up accounts for big fishing firms into vessel unit accounts.

## 8 Accessibility and clarity

The statistics is published yearly in NYT from Statistics Denmark. Data is accessible on StatBank Denmark in the tables AKFIREGN, FIREGN1, FIREGN2 and NFISK. Additionally the statistics is presented in Account Statistics for Fishery and Aquaculture: [Publication](#)

More information on the statistics subject web-page: [Account statistics for fishery and aquaculture](#)

## 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

Published in Nyt from Statistics Denmark: [Account statistics for fishery](#)

## 8.5 Publications

Account statistics for fishery and aquaculture: [Publication](#)

## 8.6 On-line database

The statistics is accessible in StatBank Denmark (Business sectors): [StatBank](#) with four tables on Account Statistics for Fishery : . [AKFIREGN] Account statistics for fishery and aquaculture by industry and items . [FIREGN1] Account statistics for fishery (total) by vessel segment and items . [FIREGN2] Account statistics for fishery (average per unit) by vessel segment and items . [NFISK] Key indicators for fishery by vessel segments and items

## 8.7 Micro-data access

Data is stored in a Oracle database and on SAS-dataset. Which is used to produce statistical tables for publication and generate specific datasets with encrypted keys for analysis at individual level. Researchers and students can by request, acceptance and fulfilling a declaration on confidentiality get access to anonymous individual data. [Researchdata](#)

## 8.8 Other

Economic data from the Account Statistics for Fishery included in the yearly Fleet Economic Report submitted to the European Commission, DG Mare Joint Research Center (JRC). Economic indicators is available on JRC's Data Dissemination webpage: : <http://datacollection.jrc.ec.europa.eu/dd/fleet>

## 8.9 Confidentiality - policy

[Data confidentiality policy](#) at Statistics Denmark.

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

Data for statistical groups with less than 3 units is not shown in the tables.

### **8.11 Documentation on methodology**

The yearly [publication](#) includes a short description.

### **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 this statistics is in the division of Food Industries.

### **9.1 Contact organisation**

Statistics Denmark

### **9.2 Contact organisation unit**

Business Statistics, Food Industries

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