

**Documentation of statistics for
Environmental Protection Expenditures 2023**

1 Introduction

In general the statistics illustrate the total direct environmental protection expenditures in the covered types of industry. Distinction is made between current expenditures and investments. Current expenditures includes as well internal costs in the enterprises as purchase of services on environmental protection. Results can be further displayed on spending according to environmental purposes: Protection of ambient air and climate, Wastewater management, Waste management, Heat/energy saving and management and Other environmental protection activities

2 Statistical presentation

The statistics describes annually the expenditures on direct environmental protection by types of industry within mining, manufacturing and utilities. Expenditure are reported at environmental purposes either as internal operating expenses or purchase of services related to environmental protection. On the investment side investments are split in either prevention or treatment.

2.1 Data description

The statistics describe Danish manufacturing enterprises direct expenditures on environmental protection. A distinction is made between operating expenses and investments.

Expenditure on environmental protection are reported either as internal operating expenses or purchase of services and goods related to environmental protection. On the investment side investments are split in either prevention or end-of-pipe treatment. The preventing investments is shown as the "environmental component" of the investments. Extra costs to intermediate consumption due to environmental regulation are not covered.

To be reported are environmental expenditures on environmental domains: Protection of ambient air and climate, Wastewater management, Waste management, Heat/energy saving and management and Other environmental protection activities.

The results are included in the Environmental Protection Expenditure Account, which are a module in the Environmental Accounts

Guidance for the compilation is in a manual [EPEA manual](#).

2.2 Classification system

The economic activities in the statistics follows the Danish industrial classification DB07 which corresponds to NACE rev. 2. and includes 2-digit industries 06-36,

Environmental purposes follows the European standards for CEPA (Classification of Environmental Protection Activities) and CreMa (Classification of resource Management activities)

The purposes are as follows: Protection of ambient air and climate, Wastewater management, Waste management, Heat/energy saving and management and Other environmental protection activities.

The expenditures are divided into internal costs, purchase of services (and goods), sustainable investments and end of pipe investments

2.3 Sector coverage

Mining and quarrying, Manufacturing and some part of the supply sector. NACE_rev2 06-36.

2.4 Statistical concepts and definitions

Purchase of Environmental Protection Services: Purchases of environmental protection services include all costs of external actors, compensation for the services that aim to prevent or control the discharge of pollutants or restore previous activities on the environment. This could be payments for collection and treatment of waste and wastewater, payments in connection with soil decontamination, inspection charges for public authorities, payments to environmental consultants for purposes such as environmental education, and payment for external consultants environmental certification or operation of environmental equipment.

Internal Expenditures on Environmental Protection: Internal expenditure on environmental protection can be salary costs (e.g. environmental coordinators), general environmental planning, internal costs associated with ISO 14001 certification costs in connection with its own staff and payments for operating leases. They relate, for example, operation and maintenance of environmental equipment, measurement and monitoring of pollution levels, environmental education and education as well as research and development.

Investment in Prevention of Environmental Impact: Investment in prevention of environmental impact include investments in "cleaner technology", e.g. equipment intended either to make existing production more environmentally friendly or to prioritize environmental considerations when purchasing new production. Pollution prevention investment is defined as capital expenditure on new, or modification of existing, methods, technologies, processes, equipment (or parts thereof) designed to prevent or reduce the amount of pollution created at the source, thereby reducing the environmental impacts associated with the release of pollutants and/or with polluting activities.

Investment in Pollution Control: Investments in pollution control include the so-called end-of-pipe solutions. Pollution treatment investment is defined as capital expenditure on methods, technologies, processes or equipment designed for collecting and removing pollution and pollutants (e.g. air emissions, effluents or solid waste) after their creation, preventing the spread and measuring the level of the pollution, and treating and disposing of pollutants generated by the operating activity of the business.

2.5 Statistical unit

The units in the statistics are enterprises, each enterprise being a legal unit.

2.6 Statistical population

The statistics covers all enterprises within mining, manufacturing and supply, NACE rev2 group 05-36

2.7 Reference area

The relevant sectors in Denmark (Mining, manufacturing, utilities)

2.8 Time coverage

The present statistics covers 2023. The statistics have been in force since 2009, but only published since 2014.

2.9 Base period

Not relevant for this statistics.

2.10 Unit of measure

The unit of measurement is the Environmental Protection Expenditures in Danish kroner (DKK), current prices.

2.11 Reference period

The reference time for the statistics is the calendar year.

2.12 Frequency of dissemination

The statistics is published at yearly basis. However, data collection has since 2017 only been every second year.

2.13 Legal acts and other agreements

The results has to be reported according to Regulation 691/2011 on environmental accounts.

2.14 Cost and burden

Total costs associated with reporting was at DKK 122,000 , based on standard estimation. There are no reporting costs in the years between data collecting.

2.15 Comment

[Environmental accounts.](#)

[Survey information.](#)

3 Statistical processing

Data are collected among enterprises every second year. All enterprises with more than 50 employees are included plus few smaller ones where needed.

The results from data collection are grossed up to totals for each type of industry after data are imputed for the smaller enterprises. These results are supplemented by expenditures in water supply and data from R&D statistics on environmental R&D.

In years without data collection, the results are calculated using last years data, changes in turnover according to the account statistics, and the statistics on Investments in manufacturing industries

3.1 Source data

The statistics is compiled based on data collected at enterprises by a questionnaire. The frame is enterprises in the industrial sector with 50 or more employees plus smaller enterprises in selected types of industry. In total data are collected for 1,000 enterprises representing approximately 75 per cent of the economic activity in the population.

Results for NACE_rev2 36, water supply, is based on estimates. Cost for research and development within environmental protection is a part of the internal costs. These data are in beforehand collected as a part of the R&D statistics.

3.2 Frequency of data collection

Bi-annual, latest for 2022.

3.3 Data collection

Data is collected by using an online questionnaire.

3.4 Data validation

The submitted data undergo an error control. Fields that are either not completed or inadequately filled in are detected. Reporting in the "non-distributable" fields are also subject for investigations to look for more specific allocation

In addition, the ratio between environmental expenditures and total turnover is examined, in order to capture mistakes in the reporting. Further, data are compared to the data submitted the previous year, preferable for the single units.

3.5 Data compilation

The validated data are linked to data from Business Accounts Statistics to get the full population. Environmental expenditures is imputed for all enterprises not subject to data collection. It is assumed that expenditures per employee can be reproduced by the imputation.

In years without data collection a data set is established using last years data. New information on current costs are estimated by development in turnover for enterprises in the survey, based on the Business Accounts Statistics. New information on investment is based on the statistics on Investments in manufacturing, used general development as well as what is reported for the purpose "Environment and security". After this exercise, the imputation takes place as in other years.

For in particular the investments, the estimation are subject to insecurity.

First results are compiled using provisional account statistics. Final figures is based on use of final account statistics.

3.6 Adjustment

No regular annual adjustment is carried out.

4 Relevance

The results is expected to meet the needs for the users. However, only direct costs are included in the statistics. Results from 2014 and onwards are included in the Green National Accounts.

4.1 User Needs

The statistics satisfy the needs for knowledge about environmental protection expenditures for selected business sectors.

4.2 User Satisfaction

Surveys on user satisfaction has not yet been conducted.

4.3 Data completeness rate

The dissemination follows in general required results according to the regulations

5 Accuracy and reliability

Overall, the results are expected to be reliable. Figures for errors are not yet compiled. The main challenge on quality is the imputation for smaller enterprises, where costs/employee rations are used. This method has been assessed in 2015 and found valid.

In years without data collection the results are less secure. Analyses show close relation between turnover and environmental costs on the short run. For investments the results of the estimation is less good due to few observations behind the results.

5.1 Overall accuracy

There have not yet been compiled statistical errors. However, at well measurement errors and grossing up errors exists.

The quality on the results on current costs are considered good. The Investments are less accurate, as they are much more volatile. Further, for the cleaner investments it is difficult to measure the environmental component.

5.2 Sampling error

As an imputation model is used for the not-selected, there are in principle no sampling errors

5.3 Non-sampling error

The main source for error is related to measurement, as the identification of some elements is difficult, in particular the internal costs and the cleaner technology investments.

And other source for errors is the imputations for smaller enterprises as the assumptions behind may not be fully correct. An analysis of the assumption shows that smaller enterprises in fact are somewhat different, however, the difference is minor and does not require further correction.

In years without data collection the insecurity is higher than in the years with data collection.

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 overall quality is expected to be satisfying. However, the investments in cleaner technology is very difficult to measure

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

Revisions will be implemented at next dissemination. Results for latest year are preliminary.

6 Timeliness and punctuality

Results are published according to the schedule.

6.1 Timeliness and time lag - final results

Results are expected to be published in December the year after the reference year.

6.2 Punctuality

On time.

7 Comparability

The comparability is expected to be good from 2014 and onwards.

7.1 Comparability - geographical

The results are comparable to similar results from other countries. The environmental costs for manufacturing industries is a part of the EPEA-statistics. Results of energy savings is not part of the reporting to Eurostat according to the regulation.

7.2 Comparability over time

Results are available for 2014 and onwards. Results for latest year are provisional.

7.3 Coherence - cross domain

There are no other statistics covering same theme. However, the environmental expenditures can be compared to certain variables in the Business Accounts Statistics. Further, statistics on Environmental expenditures in total are processed. Results from the manufacturing industries are part of this.

7.4 Coherence - internal

The data are basically from one source making the consistency high.

8 Accessibility and clarity

The statistics are disseminated in the statbank. [Env. expenditures in manufacturing](#).

Further, the results is part of a module in the Danish Environmental-economic accounts [Environmental-economic 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

Latest News is published 13. December, 2023.

[Øgede udgifter til affaldshåndtering i industrien](#).

8.5 Publications

The results are included in a broader publication on Environmental-economic accounts.

[Green National Accounts for Denmark 2015-2016](#).

8.6 On-line database

Annual Results are available in the statbank

[Environmental expenditures in manufacturing](#)

8.7 Micro-data access

The data are not made general available as Micro-data. Access can be arranged.

8.8 Other

The results are also a part of statistics on total environmental expenditures in Denmark - according to new Eurostat concept.

8.9 Confidentiality - policy

Statistics Denmark's policy on confidentiality is followed

[Read the policy.](#)

8.10 Confidentiality - data treatment

The confidentiality rules are applied

8.11 Documentation on methodology

No further documentation. However, Eurostat guidelines are used in the work.

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 Science, Technology and Culture. The contact person is Ole Olsen, tel.: + 45 2977 1498, and e-mail: OLO@dst.dk.