STATISTICS DENMARK

**Documentation of statistics for
Economy-wide material flow accounts 2018**

1 Introduction

The purpose of the Economy Wide-Material Flow Account (EW-MFA) is to provide a general picture of the type and weight of the materials (natural resources and commodities) that are, on the one hand, recovered from nature or imported and, on the other hand, exported from Denmark. The Economy Wide-Material Flow Account is one of the integrated Environmental-Economic Accounts (Green National Accounts) that is used as a term for separate accounts for environmentally related matters compiled in close relation with the National Accounts. The same boundaries, definitions and classifications are used in compilation of Green National Accounts as in National Accounts. In that way, it is possible to analyse the relationship between the economy on the one hand and the environment on the other, in a logical way.

Based on the EW-MFA and a model, developed by Eurostat, the Danish imports and exports are converted into raw material equivalents (RME), which express the amount of raw materials necessary on a global scale to be able to produce a good or a service. RME includes all raw materials extracted from nature, including the raw materials required in the production processes, both with the primary producer and with all subcontractors, domestic and foreign.

2 Statistical presentation

The Material Flow Account contains information on material flows in the form of the weight of Danish resource extraction, import and exports broken down by the type of materials.

2.1 Data description

The Material Flow Accounts describes the type and weight of the commodities and materials that are necessary for maintaining Danish production and consumption and for exports of commodities. The accounts provide a basis for understanding the general relationships between consumption of resources and generation of waste and other undesirable residual products.

The material flows converted into raw material equivalents reflect the global extraction of raw materials that is necessary for the production of the imports, exports and the total Danish resource use.

2.2 Classification system

The EW-MFA is published on the basis of a Eurostat's classification system as part of the European environmental accounts. This classification splits the resources into 50 or so groups, which contain biomass, metal ores and products, non-metallic minerals and products, fossil energy carriers and products, and other resources.

The underlying import and export data is classified according to the Combined Nomenclature (CN), which is the merchandise nomenclature applied by the EU when reporting data on EU trade and trade with non-EU countries. In the Danish External Trade in Goods Statistics the most detailed statistics published are classified according to the CN. The CN consists of around 9,300 commodity codes. A detailed description of the CN codes is available in the EU Official Journal dissemination of Combined Nomenclature.

The classification of the material flows converted to raw materials diverges from the EW-MFA classification for some raw materials groups. In addition, the RME account contains more aggregated raw material groups than the EW-MFA account. The groups under the RME are divided into raw materials and exported and imported goods and services. The goods and services expressed in RME follow the CPA nomenclature.

2.3 Sector coverage

Not relevant for these statistics.

2.4 Statistical concepts and definitions

Material Flow Accounts: Economy-wide material flow accounts (EW-MFA) means consistent compilations of the material inputs into national economies, the changes of material stock within the economy and the material outputs to other economies or to the environment.

2.5 Statistical unit

The statistical unit for the EW-MFA is the total economy as described in the National Accounts.

The raw material equivalents can be assessed for an individual product or for top-level categories, such as total imports, exports or consumption.

2.6 Statistical population

All units engaged in economic activity on the Danish territory.

2.7 Reference area

The EW-MFA: Denmark. The RME: Global resource extraction necessary to satisfy Danish import, export, consumption etc.

2.8 Time coverage

The Material Flow Accounts cover the time period from 1993 and onwards.

The raw material equivalents cover the time period from 2008 and onwards.

2.9 Base period

Not relevant for these statistics.

2.10 Unit of measure

The material flows are measured in tonnes per year.

2.11 Reference period

These statistics covers the calendar year.

2.12 Frequency of dissemination

Yearly.

2.13 Legal acts and other agreements

The legal authority to collect data is provided by the Act on Statistics Denmark, section 8, as subsequently amended (most recently by Act no. 610 of 30th May, 2018).

These statistics are covered by Regulation no. 691/2011 on European environmental economic accounts.

2.14 Cost and burden

There is no direct response burden in relation to the compilation of these statistics, since all information is based on existing statistics.

2.15 Comment

Further information can be found at the subject page on Material flows and waste or by contacting Statistics Denmark directly.

3 Statistical processing

Material Flow Accounts and the raw material equivalents are compiled on the basis of internal and external sources on resource extraction. The RME account is based on modelling.

3.1 Source data

The Economy-wide Material Flow accounts are based on information concerning weights of materials is obtained from the external trade statistics and the energy accounts as well as statistics on quarrying and agricultural statistics on agriculture. Data regarding weights of fish landings are obtained from the Ministry of Food, Agriculture and Fisheries.

The raw material equivalents are based on information from the EW-MFA, the national accounts, foreign trade statistics, energy account and the Eurostat RME model.

3.2 Frequency of data collection

EW-MFA: Annually. The RME: The frequency of data collection has not been decided yet.

3.3 Data collection

Data is collected from different internal and external sources by extracting information from data bases, excel spreadsheets and printed publications.

3.4 Data validation

First there is a process of data validation of each primary statistics, as described in the respective quality statements of the relevant statistics. It is followed by an initial validation of input data in connection to compilation of the Material Flow Accounts.

3.5 Data compilation

First there is a process of data validation of each primary statistics, as described in the respective quality statements of the relevant statistics. It is followed by an initial validation of input data in connection to compilation of the Material Flow Accounts.

3.6 Adjustment

Not relevant for these statistics.

4 Relevance

Environmental Accounts are relevant for those interested in the correlation between the economy on the one side and environment and natural resources on the other side. The results are relevant for conducting analyses of the circular economy. Ministries and consultant firms are among the main users of environmental accounts. Accounts are included in the overall European environmental accounts, collected and compiled by Eurostat.

4.1 User Needs

External users of the material flow accounts are ministries, business and trade organizations, research institutes and engineering consultancy firms who want a general view of the interactions between the economy and the environment.

4.2 User Satisfaction

The EW-MFA is discussed with expert users in the user committee for economic-environmental statistics and accounts.

4.3 Data completeness rate

Import and export data, along with the derived indicators in the EW-MFA can be considered complete. In order to fulfil the Eurostat's requirements for completeness within the EW-MFA, some additional flows of residuals (emissions to air, among others), as well as material accumulation in the economy, have to be accounted for as well.

5 Accuracy and reliability

Information concerning the material flows in the form of the weights of some different material types areas based on conversion factors from other units to kilogram's. For these types of materials some extra uncertainty is introduced by the conversion. Therefore, the information on the weights of materials is considered to be less accurate.

The raw material equivalents are based on a relatively new calculation method involving model calculations and a vast number of assumptions and estimates. Accordingly, the figures are subject to a substantial degree of uncertainty and first and foremost reflect orders of magnitude.

5.1 Overall accuracy

Information concerning the material flows in the form of the weights of some different material types areas based on conversion factors from other units to kilogram's. For these types of materials some extra uncertainty is introduced by the conversion. Therefore, the information on the weights of materials is considered to be less accurate.

The raw material equivalents are based on a relatively new calculation method involving model calculations and a vast number of assumptions and estimates. Accordingly, the figures are subject to a substantial degree of uncertainty and first and foremost reflect orders of magnitude.

5.2 Sampling error

Not relevant for these statistics.

5.3 Non-sampling error

There have not been undertaken any measurements of other uncertainties for this statistics.

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 measurements of quality has been done, however the quality of the statistics is seen as best possible, given the resources available for the compilation of accounts. The Material Flow Accounts have the scope and the degree of detail that is on the same level as other countries, such as Netherlands, Sweden and Norway. Accounts are compiled in accordance with recommendations and quality standards provided by UN and Eurostat.

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

Preliminary figures are compiled and published in December. The final figures are published in December 3 years after the reference year.

6 Timeliness and punctuality

Data is normally published without delays.

6.1 Timeliness and time lag - final results

Preliminary figures are compiled and published in December. The final figures are published in December 3 years after the reference year.

6.2 Punctuality

The environmental accounts are normally published without delay in relation to the scheduled publication.

7 Comparability

The Material Flow Accounts are compiled in the form of time series and is available for each year from 1993 until the last year that is published (from 2008 for the RME). The Material Flow Accounts are consistent and fully comparable within these years. Furthermore, the Material Flow accounts are comparable with the Material Flow Accounts of other EU countries compiled according to the Regulation no. 691/2011 on European environmental economic accounts.

7.1 Comparability - geographical

Internationally there is a high degree of comparability with other countries, as the Danish Environmental accounts follow the same principles and methods as described in SEEA- framework.

7.2 Comparability over time

The Material Flow Accounts are available for each year from 1993 until the last year that is published (from 2008 for the RME). The Material Flow Accounts are consistent and fully comparable within these years.

7.3 Coherence - cross domain

The Energy Accounts contains the same information on the fossil energy and products thereof.

7.4 Coherence - internal

It is ensured that data is internally consistent.

8 Accessibility and clarity

These statistics are in a Danish press release. In the StatBank, these statistics can be found under the subject Material flows and waste. In addition the statistics has a subject page.

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 Calender can be accessed on our English website: Release Calender.

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

These statistics are published monthly in a Danish press release.

8.5 Publications

The EW-MFA is a part of the Denmark in figures yearly book and was part of the Statistical Yearbook up until 2017. The RME was the topic of the DST-analysis How the Danish consumption affects the world's natural resources.

8.6 On-line database

The statistics are published in the StatBank under the subject Material flows and waste in the following table:

- [MRM2](#): Economy-wide material flow accounts by material type and indicator
- [RME1](#): Material flows converted to raw material equivalents by type of raw material and indicator
- [RME2](#): Import and export in raw material equivalents by goods and services and type of raw material

8.7 Micro-data access

Accounts are published at the most detailed level.

8.8 Other

Not relevant for these statistics.

8.9 Confidentiality - policy

Not relevant for these statistics.

8.10 Confidentiality - data treatment

Not relevant for these statistics.

8.11 Documentation on methodology
- Statistics Denmark (2018): [Green National Accounts for Denmark 2015-2016](#).
- European Commission. Eurostat (2018): [Economy Wide Material Flow Accounts Handbook](#)
- Statistics Denmark (2019): How the Danish consumption affects the world's natural resources
- Eurostat (2019): [Documentation of the EU RME model](#)
- Monetary Fund, Organisation for Economic Co-operation and Development, United Nations, World Bank (2012): [System of Environmental-Economic Accounting 2012 - Central Framework](#).

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 are in the division of National Accounts. The person responsible is Bogomil Iliev, tel. +45 39 17 38 67, e-mail: boi@dst.dk

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