Material Flow Accounts

1 Contact	
1.1 Organization	The Statistical Office of the Slovak Republic
1.2 Address	Miletičova 3, 824 67 Bratislava
1.3 Contact name	Eva Šmelková
1.4 Organization unit	Cross-sectional Statistics Department
1.5 Phone number	+421 2 50236 341; +421 2 50236 339
1.6 Email address	info@statistics.sk

2 Metadata update	
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3 Statistical presentation

3.1 Data description

Material flow accounts (MFA) provide an aggregate overview of the material flows (in thousand tonnes per year) into and out of national economy. MFA cover solid, liquid and gaseous, materials, except for flows of water and air.

Data on the following flows are compiled and published at national level: domestic extraction (table zp1003rs), imports and exports (table zp1004rs). MFA are used to derive various material flow indicators, for example domestic material consumption (DMC) (table zp1008rs) and resource productivity.

Data on domestic extraction are classified by material categories and the main categories are biomass, metal ores, non-metallic minerals, fossil fuels. Data on imports and exports are compiled broken down by material categories, which are similar as in case of domestic extraction and the main categories are biomass and biomass products, metal ores - raw and processed, non-metallic minerals - raw and processed, fossil fuels - raw and processed and other products. Data on domestic extraction, imports and exports are also available in more detail classification of material categories.

3.2 Classification system

MFA record physical flows of materials broken down by type of flow - e.g. domestic extraction (natural inputs), outputs into environment (residuals), imports and exports (products) and by type of materials. Required material categories/types are specified in a classification of materials which is included in Annex III of t he Regulation (EC) 691/2011 on European environmental economic accounts (section 5 of the annex).

The classification of materials is hierarchical with 4 main material categories. Each main category is further broken down. Breakdown levels of classification of materials are the following: material categories (1-digit code), material classes (2-digit code), material groups (3-digit code) and material sub-groups (4-digit code).

3.3 Sector coverage

MFA are compiled in accordance with the principles of the system of national accounts and include material flows related to activities of all resident units of national economy.

3.4 Statistical concepts and definitions

Main concepts and definitions used in the MFA statistics are presented in the handbook „ System of Environmental-Economic Accounting 2012, Central Framework “ (international statistical standard for environmental accounts) and in the Eurostat manual „ Economy-wide material flow accounts handbook “.

Material flow accounts (MFA) quantify overall demands of the economic system on materials. MFA record the exchange of material flows between national economy and environment (material extraction on input side and waste flows, emissions on output side) and flows between national economy and other economies (foreign trade).

Domestic extraction is the input of materials from the natural environment to be used in the economy. The indicator measures annual amount of raw materials (except for water and air) extracted from the environment per year.

Foreign trade (imports and exports) covers total foreign trade (intra and extra EU trade) and for the purpose of MFA is expressed in mass weight units.

Domestic material consumption (DMC) monitors total amount of materials, which are directly used within the national economy. The indicator is calculated as domestic material input (domestic extraction plus imports) minus exports.

3.5 Statistical unit

Statistical units differ, depending on the different data sources used for MFA compilation (e.g. agriculture, forestry statistics, geological survey, foreign trade statistics).

3.6 Statistical population

MFA include all material flows (excluding water and air) crossing the system boundaries of the national economy on the input or the output side. Material inputs to the economy cover extraction of natural resources from the natural environment and imports of material products from the rest of the world. On the other side, material outputs include discharge of residuals from economy to the natural environment and exports of material products to the rest of the world. Inter-industry product flows within national economy and natural flows within the environment are excluded from the MFA framework.

System boundaries are: a) between national economy and the environment (material extraction from the environment and discharge of residuals to the environment); b) between the national economy and the rest of the world (imports and exports).

3.7 Reference area

MFA data are compiled at national level (the whole area of the SR).
Also data for other EU countries and data for total EU are available in the Eurostat public database.

3.8 Time coverage

Available in DATAcube. database are MFA data for time series 1998 - 2018.

3.9 Base period

Not applicable.

4 Unit of measure

Data in MFA are presented in 1 000 tonnes.

5 Reference period

Reference period is the calendar year.

6 Institutional mandate

6.1 Legal acts and other agreements

MFA are compiled on the basis of the Regulation (EU) No 691/2011 of the European Parliament and of the Council of6 July 2011 on European environmental economic accounts . MFA module is specified in the Annex III of the regulation.

6.2 Data sharing

Statistical information from the MFA is used for the purpose of fulfilling reporting obligations of the Slovak Republic following the requirements of the European Statistical System, international institutions and for meeting the needs of the Information System. Statistical outputs are on regular basis provided to international and national organizations (Eurostat, Ministry of Environment of the SR and its organizations) or irregularly to other users.

7 Confidentiality

7.1 Confidentiality - policy

The Statistical Office of the Slovak Republic (SOSR) is responsible for the protection of confidential data obtained and guarantees their use exclusively for statistical purposes. In accordance with the Act on State Statistics No. 540/2001 Coll. §2g and §30, the SOSR may not publish confidential statistical data, but only information resulting from the aggregation of confidential statistical data, which does not allow direct or indirect identification of the reporting unit.
SOSR has introduced principles and procedures for the protection of confidential data in internal directives and instructions. The directive on the protection of confidential statistical data regulates the method of management and implementation of activities related to ensuring the protection

of confidential statistical data in the SOSR. The internal methodological instruction of the SOSR regulates specific methods and parameter values used in the protection of confidential statistical data of individual statistical surveys and data sets.

7.2 Confidentiality - data treatment

Tables on MFA published in the public database of the Statistical Office of the SR do not contain confidential statistical data. Data are presented in tables at aggregate level.

8 Release policy

8.1 Release calendar

Not applicable. MFA statistics is not included in the First release calendar of the Statistical Office of the SR.

8.2 Release calendar access

Not applicable.

8.3 User access

On day specified in the schedule for updating the data of the public database the published information are available for all users.

9 Frequency of dissemination

Annually.

10 Accessibility and clarity

10.1 News release

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10.2 Publications

Statistical Office of the SR (SOSR) publishes on annual basis the publication Environmental Accounts - Material Flow Accounts , that is available on its website. The publication is issued in accordance with Catalogue of Publications of the SOSR.

10.3 On-line database

MFA data are published in the public database of the Statistical Office of the SR - DATAcube.: table for domestic extraction [zp1003rs], table for imports/exports [zp1004rs], table for domestic material consumption [zp1008rs].

MFA data sets are available in Eurostat public database in the folder "Material flows and resource productivity" (access: https://ec.europa.eu/eurostat/data/database > Database by themes > Environment and energy > Environment > Material flows and resource productivity, env_mrp).

Selected indicators calculated on the basis of MFA data are available on the information portal of the Ministry of the Environment of the SR - Enviroportal: Resource productivity , Material productivity , Domestic material consumption.

10.4 Micro-data access

Users are provided with aggregated data, microdata are not published.

10.5 Other

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10.6 Documentation on methodology

MFA are compiled in accordance with Eurostat methodology. Manual " Economy-wide material flow accounts handbook " is available on the Eurostat website.

10.7 Quality documentation

Following internal project documentation is available for the compilation of statistical outputs:
• methodological guidelines for applying mathematical-statistical methods for statistical surveys,
• methodological guidelines for quality indicators of statistical outputs and statistical processes.

The quality report on MFA data in the structure SIMS (Single Integrated Metadata Structure) in ESS Metadata Handler, is annually elaborated and provided to Eurostat. Current quality reports for particular member states are published on the Eurostat website: https://ec.europa.eu/eurostat/cache/metadata/en/env_ac_mfa_sims.htm (select country in the box "National metadata").

11 Quality management

11.1 Quality assurance

The Quality policy is defined and publicly accessible in the Quality Declaration and Quality Policy documents.

Quality Declaration expresses the basic ideas and commitments of the President and top management of the Statistical Office of the Slovak Republic (SOSR) for the Quality Policy as well as increasing efficiency and effectiveness of the integrated management system of the SOSR.

Quality policy is based on the mission of the SOSR: to provide high quality and objective statistical products and services by keeping confidentiality of statistical data and by minimising burden on interested parties using effectively existing resources with the aim to support improvement of the information and intellectual capital of our customers. In this way we want to contribute to reduce risks and improve effectiveness in their decision making processes and so to support the sustainable development of the Slovak Republic as the part of EU.

Quality manual (only available in Slovak) describes the documented procedures of the quality system that are used for implementation and continuous improvement of the quality management system in SOSR. It contains a description of the quality management system and the fulfillment of requirements ISO 9001 standards. Application of the manual in practice ensures that all activities that have an impact on the quality of the products created are planned, managed, reviewed, evaluated and meet requirements.

The basis of the common quality framework of the European Statistical System is the European Statistics Code of Practice .

11.2 Quality assessment

Good quality of MFA data is ensured by using reliable source data, applying the sound methodology according to the respective Eurostat manual and by in-depth data checks within validation process.

12 Relevance

12.1 User needs

Key users of specific statistical products are listed in the Marketing Plan - products provided to international organizations e.g. Eurostat or to national institutions, e.g. Ministry of Environment of the SR.

Users of MFA data are: European Commission - Directorate-General for Environment (DG ENV), Eurostat, Ministry of Environment of the SR - mainly its organization Slovak Environmental Agency.

12.2 User satisfaction

Since the 2009, Statistical Office of the Slovak Republic (SOSR) carries out satisfaction surveys of customers with their products and services at two-year intervals. The goal of surveys is to determine customer satisfaction with the products and services of the SOSR, to obtain information about users, their interest and opinion on provision and quality of statistical products and services. The facts obtained are a valuable resource for the direction of other activities of the SOSR. One of the main goals defined in the Development Strategy of the SOSR until 2022 is to systematically increase the value of the institution and its recognition at the national and international level. The office also monitors the fulfilment of the stated goal with the help of indicators of the credibility of the SOSR and the rate of use of the information provided by the public. SOSR conducts credibility surveys through an external independent organization once every 2 years, with the intention of ensuring the objectivity and indisputability of the results from public view.

Credibility survey (only available in Slovak)
Satisfaction survey (only available in Slovak)

12.3 Completeness

Time series for MFA for Slovakia are available in the public database of Statistical Office of the SR from reference year 1998 onwards and complete data sets in line with the regulation 691/2011 on European economic environmental accounts are published in the Eurostat public database.

13 Accuracy and reliability

13.1 Overall accuracy

Overall, the accuracy of the MFA statistics is considered to be very good. Though the MFA is compiled by using a variety of data sources, all of applied sources are official statistics (internal statistics of the Statistical Office of the SR or external statistics of the Ministry of the Environment

of the SR and the Ministry of Agriculture and Rural Development of the SR). Compiled MFA are thoroughly checked to prevent errors. Compiled MFA data are also verified by Eurostat.

13.2 Sampling error

Not applicable for environmental accounts.

13.3 Non-sampling error

Not applicable for environmental accounts.

14 Timeliness and punctuality

14.1 Timeliness

At national level, the final MFA data are available 12 months after the end of reference year.

Dissemination of data in the public database of Statistical Office of the SR follows the internal schedule. Data in the tables - domestic extraction (zp1003rs), imports and exports (zp1004rs) and domestic material consumption (zp1008rs) are published within 12 after the end of the reference year.

Data on MFA is obligatory submit to Eurostat within 24 months after the end of the reference year (T+24 months), under the Regulation 691/2011 on European environmental economic accounts (annex III). This means that in December 2019 it was mandatory to report data for reference year 2017. Since the MFA data for Slovakia are available earlier as it is specified in the regulation, we report to Eurostat data for T+12 (for reference year 2018 in December 2019).

14.2 Punctuality

Deadlines for publication of data were met in accordance with the schedule.

15 Coherence and comparability

15.1 Comparability - geographical

MFA are compiled only at national level (the whole area of the SR).

Eurostat database contains data for all EU countries. Comparability of data is good, since all countries have to apply common methodology according the respective Eurostat manual.

15.2 Comparability - over time

Published MFA data are comparable in the whole time series, since the same methodology and data sources were used for compilation of the data. Possible changes/revisions in methodology are usually applied in whole time series.

15.3 Coherence - cross domain

Data are coherent with the system of national accounts and satellite system of environmental economic accounts.

15.4 Coherence - internal

Statistical outputs are internally consistent without deviations.

16 Cost and burden

Not applicable. No specific statistical survey for the purpose of obtaining data for MFA is conducted. MFA are compiled by using already existing statistics.

17 Data revision

17.1 Data revision - policy

The Revision policy regulates the general rules and procedures applied in revisions at the Statistical Office of the SR (SOSR). The same revision policy applies to national and international users. In accordance with the Revision policy, the reason of the revision is always indicated. The Revisions policy as well as the Revisions calendar is available to users on the web portal of the SOSR (only available in Slovak).

SOSR distinguishes the following revisions:
from the content point of view the reason of the revision is
-incorporation of better quality data based on a more complete source, including replacing imputations with collected data,
-correction of data as a result of updating seasonal factors and changing the base period,
-data modification based on more accurate methodology (in concepts, definitions and classifications) and changes in statistical methods,
-performing corrections in source data and calculations.
in terms of time the revisions are divided into
-ordinary revisions - are revisions without significant modifications of the methodologies; these are usually more significant data corrections, including large values obtained from new sources; they are carried out periodically on precisely set up dates, to update monthly and quarterly data, until the next publication of the data,
-annual revisions - are revisions that are made when all monthly and quarterly data are available and more detailed results from annual surveys are already available,
-extraordinary and major revisions - are revisions of definitive data due to significant methodological changes resulting from revision of methodologies, changes in procedures and statistical-mathematical calculation methods or data corrections; an extraordinary revision may result (e.g. by changing the definition) in break in time series data comparability.

17.2 Data revision - practice

Published MFA data are final data on which no regular revisions are performed.
In case of revisions/corrections of data, the note that data were revised is provided. Possible changes in methodology are communicated after their implementation in the form of methodological notes or footnotes.

18 Statistical processing

18.1 Source data

Data compiled in MFA are obtained from variety of data sources - from internal data source of the Statistical Office of the SR (SOSR): agriculture statistics - data on crop production, foreign trade statistics - data on import and export and also from external data sources: Ministry of the Environment of the SR/State Geological Institute - data on mineral extraction, Ministry of Agriculture and Rural Development of the SR/National Forest Centre - data on logging.

Data on domestic extraction for particular material categories are obtained form the following data sources:

- agricultural crops (except of nuts and fruits), fodder crops and grazed biomass - statistical survey of the SOSR on crop production - Pol 18-01,
- crop residues - estimates by using IT tool developed by Eurostat, estimates are based on data from Pol 18-01 and Eurostat standard coefficients are applied in calculations,
- nuts and fruits - estimate of fruit harvest and fruit production carried out by the Ministry of Agriculture and Rural Development of the SR - Odh (MPRV SR) 1-03,
- wood - statistical survey of the Ministry of Agriculture and Rural Development of the SR on supplies of wood in forestry - Les (MPRV SR) 2-04,
- hunting - statistical survey of the Ministry of Agriculture and Rural Development of the SR on hunting ground and state of game and game hunting - Polov (MPRV SR) 12-01,
- minerals - statistical survey of the Ministry of the Environment of the SR on state and changes of reserves of exclusive and non-exclusive minerals - Geo (MŽP SR) 3-01/3a-01.

Source of data on import and export is foreign trade statistics, specifically EXTRASTAT a INTRASTAT system. EXTRASTAT system provides information on exchange of commodities with non-EU countries and it is based on customs declarations. INTRASTAT system contains information on trade in goods with EU Member States as partner countries and data are obtained from statistical surveys -declaration on arrival of goods INTRASTAT 1-12, declaration on dispatch of goods INTRASTAT 2-12.

18.2 Frequency of data collection

Statistical surveys used as data sources for compiling the MFA (mentioned in the item 18.1) have different frequency of data collection:

- statistical survey on crop production - annual periodicity,
- statistical survey on supplies of wood in forestry - quarterly periodicity,
- statistical survey on stock of game and hunting ground, state of game and game hunting - annual periodicity,
- statistical survey on state and changes of reserves of exclusive and non-exclusive minerals - annual periodicity,
- declaration on arrival and dispatch of goods (INTRASTAT system) - monthly periodicity.

Data from listed statistical surveys are compiled in MFA on annual basis.

18.3 Data collection

MFA are compiled by using data form already existing internal and external data sources listed in the item 18.1. Data collection for these statistical surveys is conducted according to the Programme of State Statistical Surveys .

No specific survey for the purpose of obtaining data for MFA compilation is carried out.

18.4 Data validation

The source data for the MFA are checked and verified within the process of data collection, on the basis of checks build in the integrated statistical information system.
Compiled MFA for Slovakia are thoroughly checked and validated in the Statistical Office of the SR and also in Eurostat.

18.5 Data compilation

The source data collected in the statistical surveys listed in the item 18.1. are compiled into required aggregates for domestic extraction, imports and exports broken down by material categories.
MFA indicators are calculated on the basis of data compiled in MFA (e.g. DMC = domestic extraction plus imports minus exports; resource productivity = ratio of gross domestic product to the DMC etc.).

18.6 Adjustment

No data adjustment.

19 Comment