# Air Emissions Accounts

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| 2 Metadata update | |
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| **2.1 Date of last update** | 27.02.2024 |

## 3 Statistical presentation

### 3.1 Data description

Air emissions accounts (AEA) interconnect information on air emissions with economic information. AEA provide data on amounts of emissions generated by production and consumption activities broken down by economic sectors and households per year in weight units.

At national level, data on amount of emitted emissions of air pollutants including emissions of a greenhouse gases (GHG) broken down by economic activities and for households are compiled and published: Air emissions accounts (table zp1002rs).

### 3.2 Classification system

The data on production of emissions of the following GHGs and air pollutants are recorded in AEA: Carbon dioxide (CO2) - separately for CO2 without emissions from biomass and CO2 from biomass used as a fuel, Nitrous oxide (N2O), Methane (CH4), Hydrofluorocarbons (HFCs), Perfluorocarbons (PFCs), Sulphur hexafluoride and nitrogen trifluoride (SF6_NF3), Nitrogen oxides (NOx), Sulphur dioxide (SO2), Ammonia (NH3), Non-methane volatile organic compounds (NMVOC), Carbon monoxide (CO), Particulate matter < 10µm (PM10), Particulate matter < 2,5µm (PM2,5).

Data in AEA are presented broken down by economic activities in accordance with the statistical classification of economic activities NACE Rev.2. The aggregation level A*64 is applied (it means 64 categories of economic activities), which is fully compatible with the tables in the system of national accounts (input-output tables). Also emissions from households (HH) in the following breakdown are included in AEA: transport, heating/cooling, other.

### 3.3 Sector coverage

AEA cover emissions of air pollutants including emissions of GHGs emitted to the atmosphere by the whole national economy and by households. AEA have the same system boundaries as the national accounts. Emissions arising from the activities of all resident units, regardless of where these emissions actually occur geographically are recorded in AEA.

### 3.4 Statistical concepts and definitions

Main concepts and definitions used in the AEA 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 „ Manual for air emissions accounts “.

Air emissions accounts (AEA) record the flows of residual gaseous and particulate materials emitted by national economy and households to the atmosphere. Emissions arising from the activities of all resident units, regardless of where these emissions actually occur geographically are included in AEA. AEA have the same system boundaries as the national accounts. Natural flows of residual gaseous and particulate materials are excluded (e.g. volcanoes, forest fires). Also indirect air emissions arising e.g. from land use are excluded.

Air emission mean the physical flow of residuals gaseous or particulate materials from the national economy (production or consumption processes) to the atmosphere (as part of the environmental system).

### 3.5 Statistical unit

AEA data refer to emissions produced by resident economic units (in the sense of System of National Accounts), including households.

### 3.6 Statistical population

The national economy as is defined in the National Accounts (ESA), i.e. all economic activities undertaken by resident units.

### 3.7 Reference area

AEA data are available only 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.

The reference area for AEA is the economic territory as defined in the National Accounts (ESA). By following this residence principle, the AEA record emissions from resident economic units' activities, regardless where they occur. This is the main conceptual difference of the AEA in comparison to emission inventories for greenhouse gases (UNFCCC) and air pollutants (CLRTAP).

### 3.8 Time coverage

AEA data for the period 2008 - 2017 are available in DATAcube. database.
Eurostat database contains AEA historical data for SR backward to 1995.

### 3.9 Base period

Not applicable.

# 4 Unit of measure

Data in AEA are presented for CO2 in 1 000 tonnes (Gg) and for the other pollutants in tonnes (Mg).

# 5 Reference period

Reference period is the calendar year.

# 6 Institutional mandate

## 6.1 Legal acts and other agreements

AEA are legally covered by the Regulation (EU) No 691/2011 of the European Parliament and of the Council of 6July 2011 on European environmental economic accounts . AEA module is specified in the Annex I of the regulation.

## 6.2 Data sharing

Statistical information from the AEA is used for or the purpose of fulfilling reporting obligations of the Slovak Republic according the requirements of the European Statistical System, the 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

AEA do not contain confidential statistical data.
Information on air pollution is not subjected to the protection of statistical confidentiality, since according to the Act 137/2010 Coll. on air, the operators of air pollution sources are obliged to provide information to public on air pollution caused by emission form their sources and about implemented measures to reduce this air pollution.

# 8 Release policy

## 8.1 Release calendar

Not applicable. AEA 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

Data on emissions of air pollutants broken down by economic activities are presented in the Statistical Yearbook of the SR (tables T 26-14 and T 26-15) and in the publication Selected indicators on Environment .

## 10.3 On-line database

AEA data are published in the public database of the Statistical Office of the SR - DATAcube.: Air emissions accounts ( table zp1002rs ).

Various AEA data sets are available in Eurostat public database in the folder "Air emissions accounts" (access: https://ec.europa.eu/eurostat/data/database > Database by themes > Environment and energy > Environment > Emissions of greenhouse gases and air pollutants > Air emissions accounts_env_air_aa).

## 10.4 Micro-data access

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

## 10.5 Other

AEA data are available on the website of the Slovak Hydrometeorological Institute in the format of separate PDF files for particular GHGs and air pollutants:
CO2: https://www.shmu.sk/File/Emisie/2020_CO2.pdf
CO2 biomass: https://www.shmu.sk/File/Emisie/2020_CO2_z_biom.pdf
CH4: https://www.shmu.sk/File/Emisie/2020_CH4.pdf

N2O: https://www.shmu.sk/File/Emisie/2020_N2O.pdf
PFC: https://www.shmu.sk/File/Emisie/2020_PFC.pdf
HFC: https://www.shmu.sk/File/Emisie/2020_HFC.pdf
SF6: https://www.shmu.sk/File/Emisie/2020_SF6_NF3.pdf
NOx: https://www.shmu.sk/File/Emisie/2020_NOx.pdf
NMVOC: https://www.shmu.sk/File/Emisie/2020_NMVOC.pdf
SOx: https://www.shmu.sk/File/Emisie/2020_SOx.pdf
NH3: https://www.shmu.sk/File/Emisie/2020_NH3.pdf
CO: https://www.shmu.sk/File/Emisie/2020_CO.pdf
PM10: https://www.shmu.sk/File/Emisie/2020_PM10.pdf
PM2.5: https://www.shmu.sk/File/Emisie/2020_PM2_5.pdf

### 10.6 Documentation on methodology

AEA are compiled in accordance with Eurostat methodology. AEA manual is available on the Eurostat website: https://ec.europa.eu/eurostat/web/products-manuals-and-guidelines/-/KS-GQ-15-009 .

### 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 AEA data for Slovakia in the "Word" format and in the structure defined by Eurostat is annually elaborated and provided to Eurostat.

## 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

The quality of AEA statistics for Slovakia is good and is still continually improving (particularly through grant projects financed by Eurostat).
Good data quality of AEA statistics is ensured by applying sound methodology for compilation of the AEA according to the Eurostat manual and by in-depth data checks within validation process.

## 12 Relevance

### 12.1 User needs

Key users of AEA data are: at international level - European Commission - Directorate-General for Environment (DG ENV), Eurostat, various environmental institutions; at national level - Ministry of Environment of the SR and its organizations.

### 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 AEA for Slovakia are available in the public database of Statistical Office of the SR from year 2008 onwards and complete data sets in line with the regulation 691/2011 on European economic environmental accounts are published in the public database of Eurostat (back to 1995).

## 13 Accuracy and reliability

### 13.1 Overall accuracy

Overall, the accuracy of the AEA statistics is considered to be good. AEA are compiled on the basis of information from the National Inventory System of the SR for GHGs under UNFCCC convention and from the National Emissions Information System (NEIS). Compiled AEA are

thoroughly checked to prevent errors and validated in the Slovak Hydrometeorological Institute, Statistical Office of the SR and also 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

Final data at national level are available 21 months after the end of reference year.

Dissemination of data in the public database of Statistical Office of the SR follows the internal schedule. AEA data are published by 22 months after the end of reference year.

Data on AEA is obligatory submit to Eurostat within 21 months after the end of the reference year (T+21 months), under the Regulation 691/2011 on European environmental economic accounts. It means that data for reference year 2017 were reported to Eurostat in September 2019.

### 14.2 Punctuality

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

## 15 Coherence and comparability

### 15.1 Comparability - geographical

AEA are compiled only at the national level (SR).

Eurostat database contains data for all EU countries including for Slovakia. Comparability of data is good, since all countries shall apply common methodology for data compilation according the respective Eurostat manual.

### 15.2 Comparability - over time

Published AEA 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 AEA is conducted. AEA are compiled by using already existing data sources - national emission systems.

## 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

AEA data are annually revised for the whole time series on the basis of revisions in national emissions inventories. Information on regular revisions of the time series is available as a note.

Possible changes in methodology are communicated after their implementation in the form of methodological notes or footnotes. Changes/improvement of the methodology implemented within the grant projects are described in the respective implementation reports available on the website of Slovak Hydrometeorological Institute: https://oeab.shmu.sk/en/about-us/projects.html .

## 18 Statistical processing

### 18.1 Source data

AEA are compiled on the basis of data from the national emissions inventories for air pollutants and GHGs.
The main source of data for GHG emissions is the Annual GHG Emissions Inventory submission that is reported to the UNFCCC. GHG emissions balance is based on the annual statistical data provided by the Statistical Office of the SR, data from the EU Emission Trading System (EU ETS), data collected in the National Emissions Information System (NEIS) and information from various national and international organisations (e.g. EUROCONTROL).
In the case of air pollutants, the main source of input emissions data is the National Emission Information System ( the NEIS database ) which covers medium and large stationary sources of air pollution. Operators of large and medium air pollution sources are obliged to report, on annual basis, specific data on the operation. Data obtained from operators are gathered in the NEIS database. The NEIS database covers emissions from energy and industry sectors, partly fugitive emissions and emissions from the waste sector. The emissions inventory for other sectors is annually compiled by applying calculations based on the activity and auxiliary data provided by the Statistical Office of the SR and by applying international methodologies (agriculture and waste sectors) or national methodologies (households sector).

### 18.2 Frequency of data collection

National emissions inventories for air pollutants and GHGs used as a data source for the AEA are elaborated and reported in annual periodicity.

### 18.3 Data collection

AEA are compiled by using data form already existing data sources in the Slovak Hydrometeorological Institute listed in the item 18.1 "Source data". No specific statistical survey for the purpose of obtaining data for AEA is carried out.

### 18.4 Data validation

Source data from the national emissions inventories are checked and validated within the Slovak Hydrometeorological Institute. The NEIS database used for obtaining data on emissions of air pollutants allows complex data collection a processing at particular District Environmental Offices and verification of accuracy of calculation of emissions from input data reported by operators of large and medium air pollution sources.
Compiled AEA for Slovakia are in-depth checked and validated by the Statistical Office of the SR and also by Eurostat.

### 18.5 Data compilation

In compiling of AEA at national level, the inventory-first approach is applied in case of air pollutants emissions from stationary air pollution sources. It means that compilation of this part of AEA is based on data from the reporting of Air Pollutants Emission Inventory under the Convention of UNECE on Long-Range Transboundary Air Pollution (CLRTAP Convention) and under Directive (EU) 2016/2284 on the Reduction of National Emission of Certain Pollutants (NECD). Data on emissions from economic activities are allocated to NACE Rev.2 categories based on information on main economic activity of operators of stationary air pollution sources.

In the case of GHGs emissions from stationary air pollution sources, the different approaches are applied depending on different sectors. For compilation of data for energy and industry sector energy-first approach is applied taking into consideration specific national circumstances.

Allocation of emission arising from these sectors is based on information from energy statistics and from Physical energy flow accounts (PEFA). As regards GHGs emissions from agriculture and waste sector, the inventory-first approach is used. It means that emissions from GHGs inventories for these sectors are allocated to NACE Rev.2 categories on the basis of value added of particular NACE Rev.2 economic activities and taking into consideration specific national circumstances.

The national methodology for allocation of emissions from transport sector (mobile air pollution sources) to NACE Rev.2 categories and households is specified in the document “Road transport allocation method of the SR“ which is available on CIRCA BC in the folder Environment Statistics, Indicators and Accounting > Physical environmental accounts > Road transport allocation to NACE and households > Inventory of country methods - document SK-Description_v2.docx.

The national methodology for calculation of emissions from households’ heating is described in the document “ Description of methodology for households’ heating “.

The methodology for compiling the air emissions account is described in detail in technical implementation report on the project titled “ Quality improvements of the air emission accounts and extension of provided time-series ”.

### 18.6 Adjustment

No data adjustment.

## 19 Comment