

NATIONAL SYSTEM FOR ESTIMATION OF SOURCES AND SINKS OF GREENHOUSE GASES AND THEIR PRECURSORS

NS SR description

This document belongs as an integral part of the draft law, specifies and describes the individual points of paragraph 14

6.5.2022

Contents

| | |
|--|-----------|
| 1. Introduction and purpose of the NS SR | 3 |
| 2. Historical context of the establishment of the NS SR | 5 |
| 3. Current status | 6 |
| 4. Legislation | 6 |
| 4.1 International legislation: | 6 |
| 4.2 European legislation: | 6 |
| 4.3 National legislation: | 7 |
| 4.4 Related information systems | 7 |
| 5. NS SR structure | 7 |
| 6. Sectoral emissions distributions | 11 |
| 6.1 Energy and activities related to fuel combustion | 11 |
| 6.2 Industrial processes and product use | 12 |
| 6.3 Agriculture | 13 |
| 6.4 Land Use, Land-Use Change and Forestry (LULUCF) | 13 |
| 6.5 WASTE | 14 |
| 7. Capacity | 14 |
| 7.1 Internal experts | 14 |
| 7.2 External capacity | 15 |
| 8. Definitions and abbreviations | 15 |
| Annex No. 1: Activity data for NS SR | 17 |
| LULUCF sector | 17 |
| Agriculture sector | 18 |
| IPPU sector | 21 |
| Transport sector | 25 |
| Energy sector | 26 |
| Waste sector | 29 |
| Residential sector | 30 |
| Annex No. 2: Structure of processes of the NS SR | 32 |
| Annex No. 3: QA/QC plans | 33 |

1. Introduction and purpose of the NS SR

Inventories of sources and sinks of greenhouse gases emission, their precursors and other pollutants for the Slovak Republic are prepared annually and emissions are prepared on a sectoral basis - energy, including transport, industry, land use, changes in land use and forestry (LULUCF), agriculture and waste. To ensure the preparation of inventories that meet detailed and demanding criteria, the NATIONAL SYSTEM FOR ESTIMATION OF SOURCES AND SINKS OF GREENHOUSE GASES AND THEIR PRECURSORS, in short just the National System of the Slovak Republic (NS SR), was created. The obligation to create and, in accordance with current requirements, to develop NS SR, is set for the Slovak Republic in the United Nations Framework Convention on Climate Change and the Kyoto Protocol to this convention, according to Article 5, paragraph 1.

The system needs to be constantly improved, which is why its structure is designed in such a way that it flexibly allows for the inclusion of changes resulting from the requirements for continuous improvement of the quality of emission preparation, as well as the input data used, in compliance with all the rules that NS SR must follow.

Harmonization of the NS SR with international rules and decisions of the Executive Bodies of the UN Framework Convention on Climate Change (UNFCCC) and with the new transparency framework agreed at the 21st Conference of Parties to the UNFCCC (COP 21) in Paris in 2015 is essential. The binding, signed outcome of COP 21, which was subsequently ratified by the majority of UNFCCC participating parties, is known as the Paris Agreement (PA). NS SR will also integrate emissions and projections of air pollutants unify methodological procedures for individual economic sectors and emission categories.

The Slovak Hydrometeorological Institute - Department of Emissions and Biofuels (SHMÚ - OEaB) is authorised by the Ministry of the Environment of the Slovak Republic (MŽP SR) with the management and implementation of the NS SR according to Article 5.1 of the Kyoto Protocol. Within the NS SR, the so-called Single National Entity (SNE)¹ was established as a coordinator of the NS SR. The SNE was officially appointed by the Decision of the Director General of the SHMÚ No 16/2011 in August 2011 and amended by the Decision of the Director General of the SHMÚ No 8/2012 in September 2012.

In connection with the finish of the Kyoto Protocol after 2020 and the ratification of the PA and the subsequent amendment of the European legislation (further on in the section Legislative framework), new requirements and challenges arise for the performance of the tasks of the NS SR. One of them is the harmonization of the institutional and substantive implementation of the NS SR with the new rules established after 2015, intended for implementation by the end of 2023.

It is necessary to continue to monitor the development of climate negotiations within the framework of the UNFCCC and actively participate in the negotiations, as well as to participate in joint EU activities in the field of climate change and air protection. Due to the cross-cutting nature of the air protection, climate change and emissions agenda, an interdepartmental approach and integrated planning,

¹ "Vestník" (Official Journal of the Ministry of Environment), XV, 3, 2007, page 19: National Inventory System of the Slovak Republic for the GHG emissions and sinks under the Article 5, of the Kyoto Protocol

including financial, material and capacity planning, are essential for the effective implementation of the Paris Agreement at the national level. For the Ministry of the Interior of the Slovak Republic and SHMÚ - OEaB, this results in the strengthening of interdepartmental and institutional cooperation.

Historically the first draft law from 2023 on climate change and low-carbon transformation of the Slovak Republic and on amendments to Act no. 162/2015 Coll. The Administrative Court Code, as amended (Climate Act) in paragraph 12 establishes and limits the rights and obligations of the National Inventory System of the Slovak Republic as follows:

- (1) National inventory system
 - a) is a national system for policies, measures, monitoring of greenhouse gas emissions and their projections, sources and sinks of greenhouse gases and their precursors,
 - b) is set for regular monitoring and preparing inventories of greenhouse gas emissions from sources and monitoring of carbon dioxide captures,
 - c) is established for preparation of emission inventories of greenhouse gases from sources and monitor carbon dioxide captures,
 - d) monitor the precursors of emissions of greenhouse gases and other pollutants,
 - e) ensures performance in the field of reporting according to a special regulation²,
 - f) administers a database of data used to ensure the fulfilment of the information obligations of the Slovak Republic related to the fulfilment of obligations in the field of climate change.
- (2) The administration of the National Inventory System is provided by the Slovak Hydrometeorological Institute.
- (3) The Slovak Hydrometeorological Institute verifies and supervises the quality of collected data in the National Inventory System. For this purpose, the Slovak Hydrometeorological Institute will prepare methodological guidelines for subjects providing data to the National Inventory System.
- (4) The Slovak Hydrometeorological Institute publishes the following data on the website, in a form understandable to the public:
 - a) annual inventory of the GHG by individual sectors,
 - b) comparison of the achieved emission reduction in individual sectors with the planned reduction on an annual basis,
 - c) annual trend of overall emission reduction.
- (5) The structure of the National Inventory System will be established by the MŽP SR and published on its website.
- (6) The calculation of the carbon footprint for public administration bodies, obligated persons in the Slovak Republic will be ensured by an authorized verifier according to a special regulation³, which will

² Article 18 and 39 of the Regulation (EU) 2018/1999

³ Law no. 505/2009 Coll. on accreditation of conformity assessment bodies and on amendments to certain laws as amended.

be guided by the methodology published on the website of the MŽP SR and the Slovak Hydrometeorological Institute. The conditions for granting, withdrawing and recognition of accreditation are governed by a special regulation.

2. Historical context of the establishment of the NS SR

One of the basic obligations given by the Kyoto Protocol (Article 5, Paragraph 1) was to create and, in accordance with current requirements, to develop national inventory systems for regular monitoring and reporting of greenhouse gas emissions and other relevant information related to climate change. The Slovak Republic responded to this obligation by creating NS SR in 2007¹ as part of SHMÚ - OEaB.

The Kyoto Protocol was approved at the Conference of Parties to the UNFCCC in 2005, subsequently ratified by a majority of the parties to the convention and entered into force in 2005. Its first binding period lasted from 2008 to 2012. The goal was to reduce total greenhouse gas emissions during this period by 8%.

Subsequently, the validity of the Kyoto Protocol was extended by an amendment from Qatar Doha until 2020. It expired at the end of 2020⁴.

In response to poor enforcement and conflicting international consensus related to the controversial Doha amendment to the Kyoto Protocol, the Paris Agreement was agreed at the 21st UN FCCC Conference of Parties (COP 21) in Paris in 2015⁵.

According to Article 13 of the PA and according to paragraphs 84-98 of decision 1/CP.21 the obligations of the participating parties to submit regular reports and publish information about their emissions, as well as methodological guidelines for fulfilling their obligations, adjustments to methodological and institutional functions occurred of national systems for emissions and projections is set. Decision 1/CP.21 contains a detailed description of the modalities, procedures and guidelines for the Transparency Framework and for Actions and Support (hereafter MPG)⁶. The annex to the decision also contains modalities for accounting for financial resources provided and mobilized in accordance with Art. 9, par. 7 of the Paris Agreement. Furthermore, in Decision 19/CMP.1, guidelines for national systems were established in order to ensure rules regarding inventory systems for reporting data on emissions, projections, indicators and policies and measures in the field of climate change.

Another important milestone in the transformation of national inventory systems to the new regime under the PA was the 24th global climate conference COP 24 to the UNFCCC in December 2018, which was held in Katowice, Poland. The conference in Katowice was a breakthrough meeting for the implementation of the PA and for meeting its goals, with the ambition of limiting the increase in global temperature to 1.5 °C compared to pre-industrial levels. The goal of the conference was to adopt a set

⁴ The second binding period established by the amendment ended in 2020 and aimed to reduce greenhouse gas emissions by a further 20% compared to 1990. Since few contracting parties have ratified the amendment, this reduction in emissions does not have a significant effect on the course of climate change.

⁵ [Paris Agreement on Climate Change](#)

⁶ [Modalities, procedures and guidelines for the transparency framework for action and support referred to in Article 13 of the Paris Agreement](#)

of rules for the implementation of the so-called PA. "Rulebook", which confirmed the international commitment in the fight against climate change. SHMÚ - OEaB experts, among many other professional events, followed the agenda of Article 13 of the Paris Agreement and paragraphs 84-98 of Decision 1/CP.21 dealing with the reporting obligations of the participating parties and methodological guidelines for reporting the fulfilment of their obligations.

3. Current status

The smooth progress of the implementation of the PA into international rules binding across all UNFCCC parties was affected by the COVID-19 pandemic and with it the difficulty of negotiation processes. The postponed COP 26 conference, which was supposed to take place in 2020 in Glasgow, has been moved to the end of 2021. From this conference was expected the overall approval of the rules for ETFs in the MPG as part of decision 1/CP.21 and finally the whole of Article 13 of the PA. The rules will change the overall functions and processes that occur within the institutionalized national inventory systems of stakeholders today. The rules for ETFs given in the MPG will subsequently enter into force on January 1, 2023, so they must be fully reflected and implemented as soon as possible.

In addition to the legislative, institutional and procedural functions of the NS SR, the transformation process is complicated in relation to the methodological, validation and reporting processes, which need to be adjusted and subsequently adjusted also in terms of the flow of funds, the allocation of suitable and sufficient capacities and ensuring a smooth transition from the original system to the new system.

One of the duties is to ensure the implementation of new methodological guidelines for inventorying greenhouse gas emissions. Currently, the [2006 IPCC Guidelines](#) for National Greenhouse Gas Inventory are used until the end of 2022. These will be replaced by the new methodological guideline [2019 IPCC Refinements](#). In addition, there will also be a change in the global warming potentials for individual greenhouse gases⁷.

4. Legislation

4.1 International legislation:

- United Nations Framework Convention on Climate Change (UNFCCC);
- Kyoto Protocol (KP);
- Paris Agreement (PA).

4.2 European legislation:

- European Green Deal;
- Regulation (EU) 2018/1999 of the European Parliament and of the Council of 11 December 2018 on the Governance of the Energy Union and Climate Action;

⁷ Transition from the GWPs 4th IPCC Assessment Report to the GWPs 5th IPCC Assessment Report. More information on the site <https://www.ipcc.ch/ar6-syr/>

- Implementing regulation EU) 2020/1208 on structure, format, submission processes and review of information;
- Regulation (EU) 2018/842 of the European Parliament and of the Council of 30 May 2018 on binding annual greenhouse gas emission reductions by Member States from 2021 to 2030 contributing to climate action to meet commitments under the Paris Agreement;
- Regulation (EU) 2018/842 of the European Parliament and of the Council of 30 May 2018 on the inclusion of greenhouse gas emissions and removals from land use, land use change and forestry in the 2030 climate and energy framework;
- Regulation (EU) 2018/842 of the European Parliament and of the Council of 6 July 2011 on European environmental economic accounts.

4.3 National legislation:

- Law no. 309/2009 Coll. on the promotion of renewable energy sources and highly efficient combined production, which implements the EP and Council Directive (EU) 2018/2001 on the promotion of the use of energy from renewable sources;
- Draft law on climate change and related decrees;
- Law no. 137/2010 Coll. on air, as amended;
- Decree of the Ministry of the Slovak Republic no. 411/2012 Coll. on monitoring emissions from stationary sources of air pollution and air quality in their surroundings;
- Law no. 17/1992 Coll. on the environment, as amended by Act no. 127/1994 Coll., no. 287/1994 Coll., no. 171/1998 Coll., no. 211/2000 Coll. and no. 332/2007 Coll.

4.4 Related information systems

- NEIS – National emission inventory system; IS managed by SHMÚ (<https://neispz.shmu.sk>)
- IS SK BIO – Information system on biofuels and bioliquids: <https://isbio.shmu.sk/>
- Information system on emissions and emission projections: <https://oeab.shmu.sk/>
- [Model TIMES](#) – preparation of emissions projections from energy and industry
- [Model COPERT](#) – preparation of emissions projections from road transport
- More information in Annex 1

5. NS SR structure

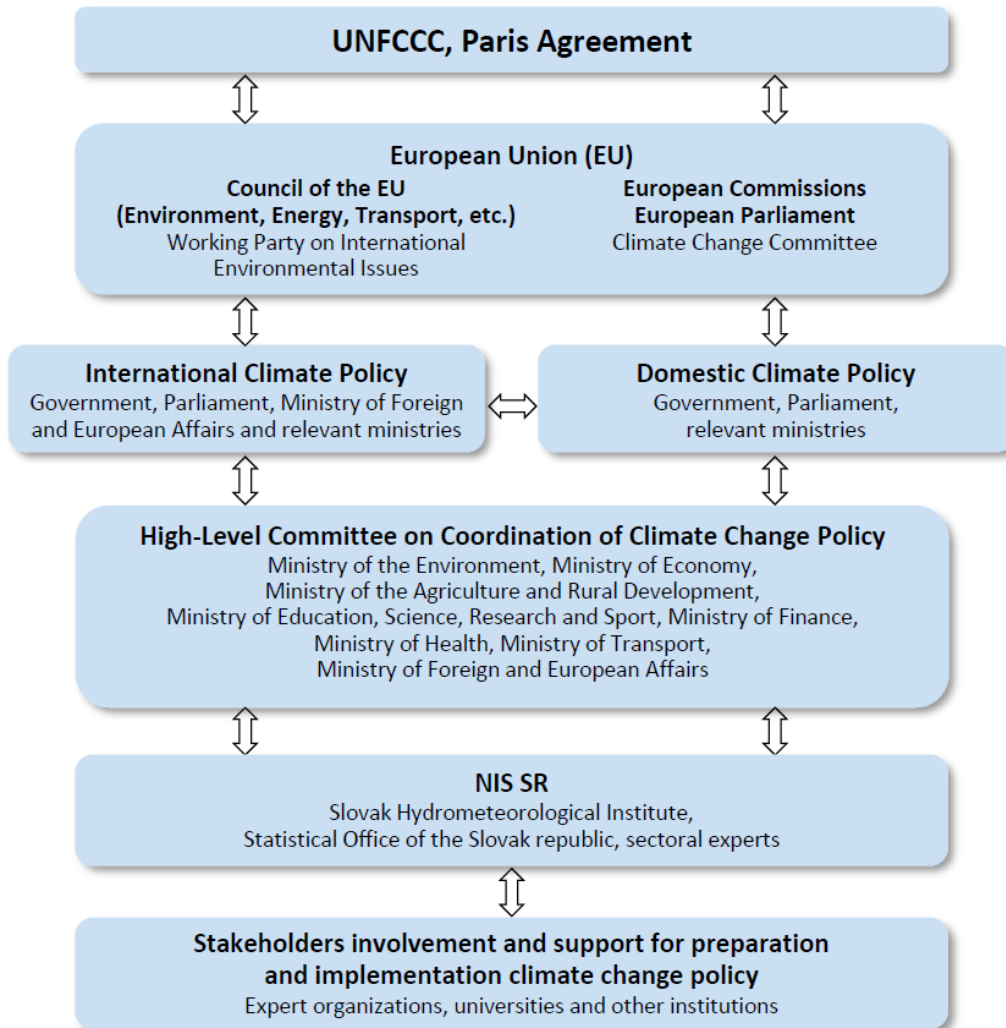
According to Article 13 of the Paris Agreement and paragraphs 84-98 of Decision 1/CP.21 and further guided in the MPG, each party included in the PA must have a national system for determining anthropogenic greenhouse gas emissions. According to Decision 1 / CP.21 the NS SR must be managed in such a way that it can include a transparent, consistent, comparable, complete and accurate inventory of greenhouse gas emissions. At the same time, the NS SR must meet the quality of planning, preparation and management of activities related to the inventory, including assessment of uncertainty and the plan for quality assurance and quality control (QA/QC). The internal and external

plans of QA/QC activities for both GHG and air pollutants are listed in Annex no. 3. Characteristics, general and specific functions and principles are further defined in detail:

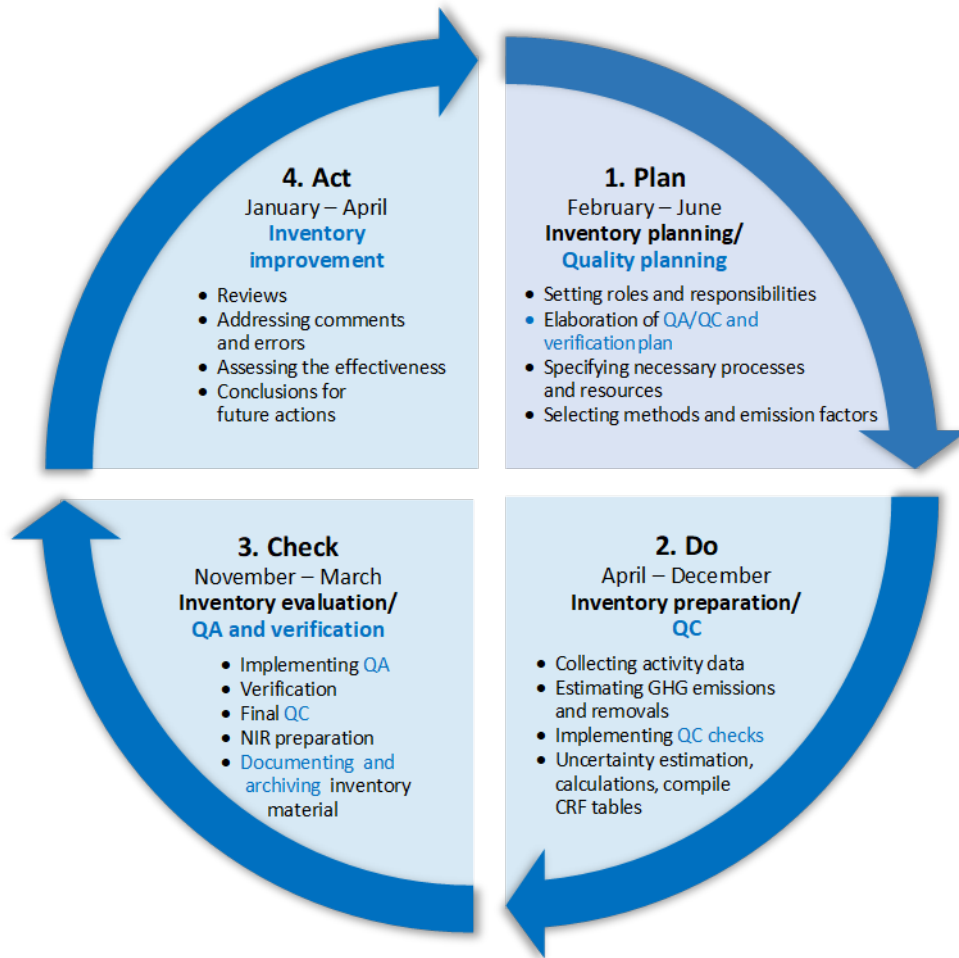
- create and ensure the functionality of the legal and institutional framework, including accepted procedures, necessary for the implementation of general and specific activities within the NS SR between management (government) and other interested responsible entities;
- ensure the necessary capacities (financial, material and human resources) for the ongoing functions within the NS SR, including the collection of data for emissions and sinks of greenhouse gases;
- create conditions to support the professional growth of employees involved in the emission inventory process;
- ensure the necessary financial resources for the fulfilment of obligations;
- define the rights and obligations of interested entities for the publication of data and the provision of information at the national and international level.

More information about structure of processes is in Annex no.2 (in Slovak language).

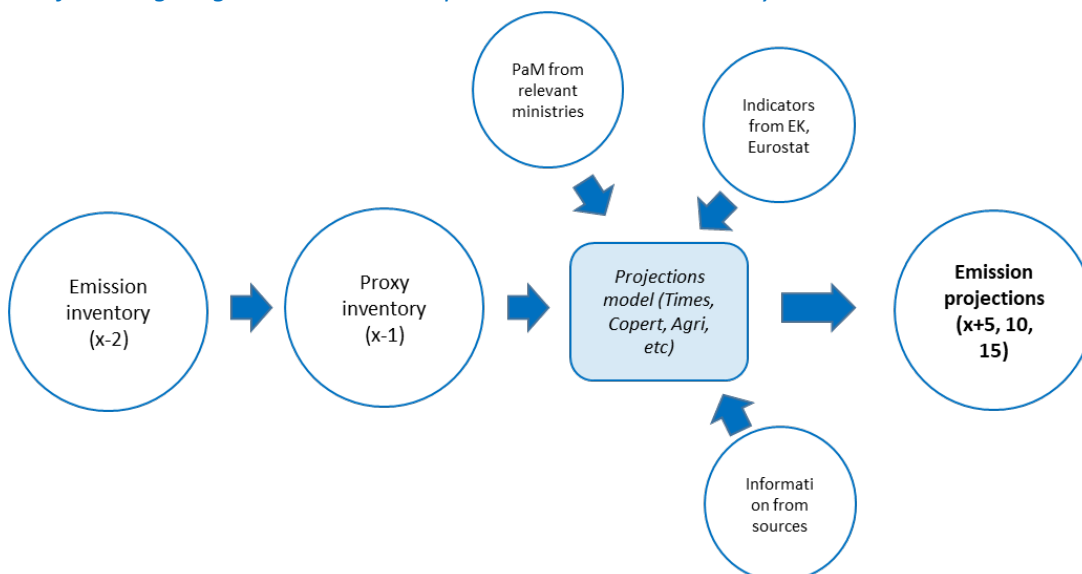
Institutional arrangements in climate change policy and its implementation:



The time management and data flow and information during the annual cycle of preparation of emissions inventories is shown in the following diagram:



The following diagram describes the processes in the emission system:



6. Sectoral emissions distributions

The inventory sources and sinks of emissions of greenhouse gases and their precursors is processed in accordance with the international methodological manuals of the IPCC (part 3) and EMEP/EEA in accordance with the sectoral principle (bottom-up) in the following sectors:

6.1 Energy and activities related to fuel combustion

The energy and fuel combustion sector is an important source of emissions in the Slovak Republic. This sector includes all economic activities that use or burn fossil fuels, including the energy industry (production of electricity and heat), fuel combustion in the manufacturing industry (industrial production and construction), transport (road and other modes of transport), households (heating and preparation of hot water), services and other small sources as well as fugitive emissions from fuels.

Emissions from the energy sector are estimated and reported in both inventories – greenhouse gases and air pollutants. Despite the fact that the separate calculation models were used, the harmonization of input and output data is at a high level.

The energy industry is a significant source of air pollution in the Slovak Republic. In the energy sector, the sources of emissions from the production of electricity and steam (power plants and central sources of heat supply), oil refining and the production of solid fuels (coke) are accounted for. The air pollution inventory is prepared using the methodology described in the EMEP/EEA Air Pollutant Emission Inventory Guidebook 2019.

The inventory of greenhouse gas emissions in the energy sector is estimated based on the methodology described in the IPCC methodological guidelines from 2006. Within the methodology, emissions are estimated using two approaches – reference and sectoral. The energy balance methodology using the reference approach, also called the top-down approach, is based on simple balance calculations that are based on energy statistics, which are prepared and published annually by the ŠÚ SR. The estimation takes into account mining, production, import, export and stocks of the given commodity.

The sectoral approach is referred to as a bottom-up approach and is based on data directly from the operations themselves with a more detailed distribution:

Category 1.A.1 Energy industries

1.A.1.a Public electricity and heat production

1.A.1.b Petroleum refining

1.A.1.c Manufacture of solid fuels and other energy industries

Category 1.A.2 Manufacturing industries and construction

1.A.2.a Iron and steel

1.A.2.b Non-ferrous metals

1.A.2.c Chemicals

1.A.2.d Pulp, paper and print

1.A.2.e Food processing, beverages and tobacco

1.A.2.f Non-metallic minerals

1.A.2.g Other

Category 1.A.3 Transport

1.A.3.a Civil aviation - domestic aviation

1.A.3.b Road transportation

1.A.3.c Railways

1.A.3.d Domestic navigation - domestic shipping

1.A.3.e Other transportation

Category 1.A.4 Other sectors

1.A.4.a Commercial and institutional building, hospitals, schools

1.A.4.b Residential buildings

1.A.4.c Agriculture/Forestry/Fishing

Category 1.A.5 Other

Category 1.B Fugitive emissions

1.B.1 Solid fuels

1.B.2 Oil and natural gas and other emissions from energy production

6.2 Industrial processes and product use

Industrial processes in Slovakia have been traditionally represented by industries such as metallurgical production, iron and steel production, production of coke and refinery products, chemical production, paper and food industry, production of mineral products and others. This sector also includes the use of solvents and other products (such as fireworks).

Category 2.A Mineral products

Category 2.B Chemical industry

Category 2.C Metal industry

Category 2.D Non-energy Products from Fuels and Solvent Use

Category 2.E Electronics Industry

Category 2.F Product Uses as Substitutes for ODS

Category 2.G Others

6.3 Agriculture

Agriculture sector is composed of:

Category 3.A Enteric fermentation

Category 3.B Manure management

Category 3.C Rice cultivation

Category 3.D Agricultural soils

Category 3.E Prescribed Burning of Savannas

Category 3.F Field Burning of Agricultural Residues

Category 3.G Liming

Category 3.H Urea Application

6.4 Land Use, Land-Use Change and Forestry (LULUCF)

The LULUCF sector is the only one in which carbon sequestration occurs in biomass. Individual categories are linked to all relevant processes in changes in carbon stocks in all five main storages (living biomass, above-ground and underground, dead biomass, soil carbon). A special category within all processes in the country are greenhouse gas emissions from biomass burning, which represent controlled burning and uncontrolled burning (e.g. forest fires). Combustion of biomass affects the emissions of all greenhouse gases.

Categories 4.A, 4.B and 4.C indicate permanent capture of carbon emissions in aggregate terms. Other parts of the landscape that are capable of sequestering carbon emissions are forest land (forest) and wood products. Other parts of the country, such as settlements, emit the emissions.

The LULUCF sector is balanced only in terms of greenhouse gases (mainly CO₂) and consists of the following categories:

Category 4.A Forests

Category 4.B Cropland

Category 4.C Grassland

Category 4.D Wetlands

Category 4.E Settlements

Category 4.F Other Land

Category 4.G Harvested Wood Products]

6.5 WASTE

The most common disposal methods are landfills and, to a lesser extent, incineration. When landfill waste decomposes, non-methane volatile organic compounds (NMVOCs) and methane are released. During the handling with waste, particulate matter (PM) emissions are released.

The waste management sector consists of the following categories:

Category 5.A Solid Waste Disposal

Category 5.B Biological Treatment of Solid Waste

Category 5.C Incineration and Open Burning of Waste

Category 5.D Wastewater Treatment and Discharge

7. Capacity

NS SR is managed by an authorized organization - SHMÚ, coordination and management is ensured by the head of the Department of Emissions and Biofuels of SHMÚ. All the above-mentioned facts have an increased demand for capacities (professional, financial, time) for internal and external experts of the NS SR.

The NS SR is responsible for the overall fulfilment of the tasks given by the legislative measures mentioned in part 4 in terms of ensuring impartiality, correctness and transparency. Therefore, it is necessary to ensure that capacity requirements are covered by an independent process or a system of funds from the state budget or a separate budget scheme (for example, in the sense of the Act on trading emission quotas as a percentage of revenues).

The coordinator of the NS of the SR is responsible for the performance of the tasks of the NS SR, the state (MŽP SR) is responsible for the financial security of the NS SR according to the requirements and the plan presented by the coordinator of the NS SR for the determined period.

The list of necessary input data and their sources are listed in Annex no. 1.

7.1 Internal experts

Internal experts of SHMÚ – OEaB, responsible for tasks fulfilment within the NS SR:

| Name | Responsibility | Capacity |
|-------------------------------|--|----------|
| Ing. Janka Szemesová, PhD. | NS SR coordinator | 100 % |
| Mgr. Lenka Zetochová | Manager quality of the NS SR | 100 % |
| Ing. Kristína Tonhauzer, PhD. | Sector agriculture | 100 % |
| Ing. Zuzana Jonáček | Preparation of emission inventories of precursors and other pollutants | 100 % |
| Mgr. Ján Horváth | Sector transport Sector fugitive emissions | 100 % |
| Mgr. Marcel Zemko | Emission projections for energy and IPPU | 60 % |
| Ing. Jozef Orečný | Emission projections for energy and IPPU | 100 % |
| Ing. Monika Jalšovská | Database NEIS | 100 % |

| Name | Responsibility | Capacity |
|-----------------------------|----------------------------------|----------|
| Mgr. Michaela Campian, PhD. | Database NEIS | 100 % |
| Mgr. Roman Mach | Uncertainty by model Monte Carlo | 20 % |

7.2 External capacity

External capacities are represented by experts involved in the fulfilment of the tasks of the NS SR, who have contracts with the SHMÚ - OEaB and/or MŽP SR:

| Organization | Responsibility | Capacity |
|--|--|----------|
| National Forest Centre Zvolen, MPRV SR | GHG inventory in Forest Land, HWP and determination land-use matrix | |
| Animal Production Research Centre VÚŽP – NPPC, MPRV SR | Activity data and analyses for animal production in agriculture sector | |
| Research Institute on Soil Protection VÚPOP – NPPC, MPRV SR | Inventory from cropland and wetland | |
| Central Control and Testing Institute in Agriculture, MPRV SR | Data provider in the Agricultural sector – soil nutrition | |
| Grassland and Mountain Agriculture Research Institute VÚTPHP – NPPC, MPRV SR | Inventory from grassland | |
| Faculty of Chemical Technology of the Slovak Technical University Bratislava | Experts on emission from energy, IPPU and wastewater | |
| State Nature Conservancy of the Slovak Republic | Activity data for wetlands and land-use matrix | |
| Statistical office of the Slovak Republic | Statistical data provider | |
| ICZ Slovakia a.s. | National Registry focal point | |

8. Definitions and abbreviations

| | |
|--------|--|
| COP | Conference of the parties |
| MS | Member state |
| ETF | Enhanced transparency framework |
| GWP | Global warming potential |
| IPCC | Intergovernmental Panel on Climate Change |
| LULUCF | Land Use, Land-Use Change and Forestry |
| MPG | Modalities, Procedurals and Guidelines |
| MŽP SR | The Ministry of the Environment of the Slovak Republic |
| NS SR | National system of Slovak Republic |
| OEaB | Department Emissions and biofuels |
| UN | United nations |

| | |
|--------|---|
| PA | Paris agreement |
| SHMÚ | Slovak Hydrometeorological Institute |
| SNE | Single National Entity |
| SR | Slovak republic |
| UNFCCC | United Nations Framework Convention on Climate Change |

Annex No. 1: Activity data for NS SR

| LULUCF sector | | | |
|----------------------|---|----------------------|---|
| Data | Type of data | Units | Source |
| Acreage | Individual categories of land use Individual permanent cultures (vineyards, orchards, gardens) Transfers of land between individual categories of land use | ha | Statistical yearbook on the soil fund SR http://www.skgeodesy.sk/ |
| | Afforestation | ha | NLC-ULZI, LHE, ŠÚ SR |
| | Reforestation by regions | ha | Statistical yearbook on the soil fund SR |
| | Forest Fires | ha | NLC-FRI |
| | Landscape size, soil in use [pl5001rr] | ha | http://datacube.statistics.sk/#!/view/sk/VBD_SK_WIN/pl5001rr/v_pl5001rr_00_00_00_sk |
| Tree species | Extensive representation of individual trees | % | NLC-ULZI, SISL tab. M SR |
| | Total normal growth of individual trees | m ³ /ha/y | NLC-ULZI database |
| Logging | Total Coniferous Deciduous Renewal intentional (OÚ) + Accidentally carried out (NV) coniferous Renewal intentional (OÚ) + Accidentally carried out (NV) deciduous | m ³ | NLC-ULZI, LHE |
| | Individual trees | m ³ | NLC-ULZI, LHE, ŠÚ SR https://slovak.statistics.sk/ |
| Stock | Total Coniferous Deciduous | m ³ | NLC-ULZI, LHE |
| | Spruce, beech, oak, pine by age | m ³ | NLC-ULZI, SISL tab. N, SR |
| | Average stock of coniferous and deciduous trees in individual regions | m ³ /ha | NLC-ULZI, SISL tab. N, SR |
| HWP | Input data for the category Products from harvested wood | m ³ , t | FAO, http://faostat3.fao.org/download/F/FO/E "Items Aggregated" |
| Bonita | Average "bonita" for spruce, fir, pine, beech, oak, poplar | | NLC-ULZI, SISL tab. M SR |
| Age | Average age for spruce, fir, pine, beech, oak, poplar | | NLC-ULZI, SISL tab. M SR |
| Soil | The percentage of agricultural soil cultivation | % | ŠÚ SR |
| Permanent grasslands | Average harvest | t/ha | http://datacube.statistics.sk/#!/view/sk/VBD_SK_WIN/pl5001rr/v_pl5001rr_00_00_00_sk |

Agriculture sector

| Data | Type of data | Units | Source |
|---------------------------------------|---|---------------------|---------------------------------------|
| Number of livestock per regions | Cattle | head | ŠÚ SR, CRZ |
| | Swine | head | |
| | Sheep | head | |
| | Other animals | head | |
| | Harvested area per crop | ha | |
| Breeding parameters cattle per region | Interim period (Dairy cows) | days | PLIS/ Information System about Breeds |
| | First calving age (Dairy cows) | days | |
| | Mortality of calves (Dairy cows) | % | |
| | Average daily gain (Dairy cows) | kg | |
| | Weaning weight (Dairy cows) | kg | |
| | The average daily gain in fattening bulls | kg | ŠÚ SR |
| | Average daily gain in heifers | kg | PLIS/Information System about Breeds |
| | Heifers' weight during weaning | head | |
| | Heifer weight at calving | head | |
| | Lactation length (Dairy cows) | days | |
| | Fat content in milk (Dairy cows) | % | |
| | Protein content in milk (Dairy cows) | % | |
| | Slaughter weight of bulls | kg | |
| | Grazing cows number | Number of livestock | |
| | Grazing heifer number | Number of livestock | |
| | Share of calving cows to the herd | % | |
| | Breed structure of milk cattle | % | |
| | Breed structure of beef cattle | % | |
| | The proportion of non-pregnant heifers | % | |
| | The proportion of pregnant heifers | % | |
| | Gross birth rate (Dairy cows) | % | |
| | Interim period (Suckled cow) | days | |
| Mortality of calves (Suckled cow) | % | | |

Agriculture sector

| Data | Type of data | Units | Source |
|---|---|----------|--------------------------------------|
| | Weaning age of calves at weaning | days | |
| | Weight of calves at weaning | kg | |
| | First calving age (Suckled cows) | days | |
| | The proportion of non-pregnant heifers | % | |
| | The proportion of pregnant heifers | % | |
| | Gross birth rate | % | |
| | Net birth rate | % | |
| | Age at first calving | day | |
| | Average daily milk yield per cow (Suckled cows) | Kg/day | |
| | The proportion of calved dairy cows | head | |
| | The proportion of calved beef cows | head | |
| | Grazing share | % | |
| Breeding parameters swine per regions | Number of breeding. (from 1 sow/year) | | PLIS/Information System about Breeds |
| | Number of births per year | | |
| | Grazing share | % | |
| Breeding parameters sheep per regions | Breeding period | Year/day | PLIS/Information System about Breeds |
| | Weight gain of lambs | kg | |
| | Weight of lambs at entry | kg | |
| | Weight of lambs at admission | kg/day | |
| | Wool production | kg | |
| | Proportion of twins from a litter | % | |
| | Weight of rams | kg | |
| | Live weight of ewes | kg | |
| | Milk production | l | |
| Grazing share | % | | |
| Feeding rations all animals per regions | Gross energy intake | MJ/day | NPPC/Department of Animal Nutrition |
| | Digestibility of feed | % DE | |
| | Share of cereal in feeding doses | % | |

Agriculture sector

| Data | Type of data | Units | Source |
|--|--|------------------------------------|-----------|
| | Metabolizable energy | MJ/day | |
| | Crude protein | g/day | |
| | Maximum volume of fibre in feeding doses | g/day | |
| | Cereal share in feeding doses | % | |
| | Type cereals in feeding doses | kg/day | |
| Manure management systems | Manure management (solid manure) | | NPPC/VÚŽV |
| | Manure management (slurries) | | |
| | Biogas station | | |
| | Abatement technics (method of manure storage and manure application to the soil) | | PPA |
| Activity data of agriculture soils – all regions | Harvested area | ha | ŠÚ SR |
| | Crop yield | t/ha | |
| | Inorganic fertilization consumption | kg of nitrogen/applied to the soil | UKSÚP |
| | Sewage sludge applied to the soils | kg of nitrogen/applied to the soil | VÚVH/ŠUSR |
| | Other organic fertilizers (compost, digestate and other) | kg of nitrogen/applied to the soil | UKSÚP |
| | Limestone and dolomite consumption | t | |
| | Average temperature of climate | °C | |
| | Precipitation | mm | SHMÚ |
| | Evapotranspiration | mm | |
| | Histosols area | ha | VÚPOP |
| Information are not available | | | |

IPPU sector

| Data | Type of data | Units | Source |
|----------------------------|--|-------------------------|--|
| Cement production | Type and amount of material (product, by-product, intermediate product, waste, raw material) | kt | ETS reports + additional data from operators |
| | EF (C) | t/t | |
| | The content of oxides originating from carbonates or the content of carbonates | % | |
| Lime production | Type and amount of material (product, by-product, intermediate product, waste, raw material) | kt | ETS reports + additional data from operators |
| | EF (C) | t/t | |
| | The content of oxides originating from carbonates or the content of carbonates | % | |
| Glass production | Type and amount of material (product, by-product, intermediate product, waste, raw material) | kt | ETS reports + additional data from operators |
| | EF (C) | t/t | |
| | The content of oxides originating from carbonates or the content of carbonates | % | |
| Ceramics | Type and amount of material (product, by-product, intermediate product, waste, raw material) | kt | ETS reports + additional data from operators |
| | EF (C) | t/t | |
| | The content of oxides originating from carbonates or the content of carbonates | % | |
| Magnesite production | Type and amount of material (product, by-product, intermediate product, waste, raw material) | kt | ETS reports + additional data from operators |
| | EF (C) | t/t | |
| | The content of oxides originating from carbonates or the content of carbonates | % | |
| Desulphurisation of coal | Type and amount of material (product, by-product, intermediate product, waste, raw material) | kt | ETS reports + additional data from operators |
| | EF (C) | t/t | |
| | The content of oxides originating from carbonates or the content of carbonates | % | |
| Ammonia production | Type and amount of fuel | thousand m ³ | ETS reports + additional data from operators |
| | EF (C) | kg/TJ | |
| | Lower calorific value (NCV) | GJ/ tis. m ³ | |
| | Type and amount of material (product, by-product, intermediate product, waste, raw material) | kt | |
| Production and use of urea | Production of urea | kt | Data from operators + ŠÚ SR |
| | CO ₂ used to produce urea | kt | |
| | Import of products containing urea | kt | |
| | Export of products containing urea | kt | |
| | Amount of urea used for DeNOX application | kt | |
| Nitric acid production | Type and amount of material (product, by-product, intermediate product, waste, raw material) | kt | |

IPPU sector

| Data | Type of data | Units | Source |
|---------------------------|--|-------------------------------------|--|
| | Emissions of N ₂ O | kt CO ₂ eq. | ETS reports + additional data from operators |
| Carbide production | Type and amount of fuel | kt, thousand m ³ | ETS reports + additional data from operators |
| | EF (C) | t/t | |
| | Lower calorific value (NCV) | GJ/ thousand m ³ , GJ/t | |
| | Type and amount of material (product, by-product, intermediate product, waste, raw material) | kt | |
| | EF (C) | t/t | |
| Petrochemicals | Type and amount of fuel | kt, thousand m ³ | ETS reports + additional data from operators |
| | EF (C) | t/t | |
| | Lower calorific value (NCV) | GJ/ thousand m ³ , GJ/t | |
| | Type and amount of material (product, by-product, intermediate product, waste, raw material) | kt | |
| | EF (C) | t/t | |
| Iron and steel production | Type and amount of fuel | kt, thousand m ³ | ETS reports |
| | EF (C) | t/t | |
| | Lower calorific value (NCV) | GJ/ thousand m ³ , GJ/t | |
| | Type and amount of material (product, by-product, intermediate product, waste, raw material) | kt | |
| | EF (C) | t/t | |
| Ferroalloys production | Type and amount of fuel | kt, thousand m ³ | ETS reports + additional data from operators |
| | EF (C) | t/t | |
| | Lower calorific value (NCV) | GJ/ thousand. m ³ , GJ/t | |
| | Type and amount of material (product, by-product, intermediate product, waste, raw material) | kt | |
| | EF (C) | t/t | |
| Aluminium production | Type and amount of fuel | kt, thousand m ³ | ETS reports + additional data from operators |
| | EF (C) | t/t | |
| | Lower calorific value (NCV) | GJ/ thousand m ³ , GJ/t | |
| | Type and amount of material (product, by-product, intermediate product, waste, raw material) | kt | |
| | EF (C) | t/t | |
| Lead production | Type and amount of material (product, by-product, intermediate product, waste, raw material) | kt | Data from operators |
| Zinc production | Type and amount of material (product, by-product, intermediate product, waste, raw material) | kt | Data from operators |

IPPU sector

| Data | Type of data | Units | Source |
|--|--|----------------|------------------------|
| Non-energetic use of lubricants | Type and amount of material (product, by-product, intermediate product, waste, raw material) | kt | ŠÚ SR |
| | EF (C) | t/t | |
| Non-energetic use of paraffin | Type and amount of material (product, by-product, intermediate product, waste, raw material) | kt | ŠÚ SR |
| | EF (C) | t/t | |
| Use of N ₂ O for medical purposes | Type and amount of material (product, by-product, intermediate product, waste, raw material) | kt | Distribution companies |
| Use of data in aerosols | Type and amount of material (product, by-product, intermediate product, waste, raw material) | kt | Distribution companies |
| Medical aerosols | Type and amount of material (product, by-product, intermediate product, waste, raw material) | kt | ŠÚKL |
| Use of F-gases | Type of F-gases | | SZCHKT |
| | Amount of new F-gases | t | |
| | Amount of purchased recovered F-gas | t | |
| | New filling of F-gases | t | |
| | Added filling of F-gases | t | |
| | Recovered amount of F-gases | t | |
| | Regenerated amount of F-gases | t | |
| | Discarded amount of F-gases | t | |
| | Leakages of new F-gases | t | |
| | Leakages of recovered F-gases | t | |
| | Category of use of F-gases | | |
| Import, export of F-gases | Type of F-gases | | SZCHKT; MŽP SR |
| | Imported amount of new F-gases | t | |
| | Imported amount of recovered F-gas | t | |
| | Exported amount of new F-gases | t | |
| | Exported amount of recovered F-gas | t | |
| | Purchase of new F-gas in Slovakia | t | |
| | Purchase of recovered F-gas in Slovakia | t | |
| | Sale of new F-gas in Slovakia | t | |
| | Sale of recovered F-gas in Slovakia | t | |
| Type of F-gases | | SZCHKT; MŽP SR | |

| IPPU sector | | | |
|---|---|-------|---------------------|
| Data | Type of data | Units | Source |
| Production and import of equipment containing F-gases | Category of use of F-gas | | |
| | Number of equipment produced | pc | |
| | Number of equipment imported | pc | |
| | Exported number of equipment | pc | |
| | Gas filling in one equipment | kg | |
| Production and registration of cars | Number of cars produced | pc | ZAP SR |
| | Registration of new cars and light commercial vehicles in Slovakia | pc | |
| | Registration of individually imported cars in Slovakia | pc | |
| Import and export | Amount of perfumes and toilet waters (330300) | kg | ŠÚ SR |
| | Amount of hair lacquers (33053000) | | |
| | Amount of pre-shave, shaving or aftershave preparations (33071000) | | |
| | Amount of personal deodorants and antiperspirants (33072000) | | |
| | Amount of polishes, creams and similar preparations, for footwear or leather (34051000) | | |
| | Amount of polishes, creams and similar preparations, for the maintenance of wooden furniture, floors or other woodwork (34052000) | | |
| | Amount of polishes and similar preparations for coachwork, other than metal polishes (34053000) and hydraulic brake fluids and other prepared liquids for hydraulic transmission (38190000) | | |
| | Amount of fungicides (380892), herbicides (380893), insecticides (380891) | | |
| | Amount of liquid soaps | | |
| | Amount of windscreen wipers, defrosters and demisters for motorcycles or motor vehicles (29312370) | | Eurostat |
| Liquid soaps | Liquid soaps production (20413180) | kg | Eurostat |
| Asphalt | Data on released solvents from road paving with asphalt | t | Balance sheets NEIS |
| | Data on the amount of asphalt used | | VUIS-Cesty |
| | Data on the amount of solvents released during the production of asphalt shingles | | Balance sheets NEIS |
| | Data on the amount of production asphalt shingles | | Operator- Icopal |
| Coating applications | Data on the amount of solvents released during the coating applications of car paints from large and medium sources | t | Balance sheets NEIS |
| | Data on the amount of solvents released during the coating applications of car paints from small sources | | FTP Server ŠÚ SR |
| | Data on the quantity applied during the coating application of car varnishes | | |

| IPPU sector | | | |
|-------------------------------|---|-------|-------------------------|
| Data | Type of data | Units | Source |
| Emissions | Data on the amount of used/released emissions from degreasing from large and medium sources | t | NEIS |
| | Data on the amount of emissions used/released from degreasing from small sources | | FTP Server ŠÚ SR |
| | Data on the amount of used/released emissions from dry cleaning from large and medium sources | | NEIS |
| | Data on the amount of used/released emissions from chemical products | | |
| | Data on the amount of emissions used/released from the printing | | |
| | Data on the amount of emissions used/discharged from other use of solvents | | |
| Fireworks and tobacco | Data on the amount of fireworks and tobacco consumed | kg | FTP Server ŠÚ SR |
| Information are not available | | | Data for air pollutants |

| Transport sector | | | |
|----------------------------------|--|---------------------------------------|-----------------------------------|
| Data | Type of data | Units | Source |
| Transport | Consumption of fossil fuels in transport | t, m ³ | SHMÚ |
| | Consumption of biofuels in transport | tonnes (kt) | |
| | Content of C, H, O in fuels | | VÚRUP a.s. |
| | Calorific value of fuels | TJ/kt | ŠÚ SR |
| | The proportion of biofuels in the fuel | % | SHMÚ |
| Aviation | Consumption of fuels | kg | EUROCONTROL |
| | Emissions of greenhouse gases and air pollutants | | |
| Road transport | Number of vehicles | pc | PP SR - IS EVO |
| | Annual mileages | km | MDV SR - STK |
| | CNG consumption in road transport | kg | Annual report under FQD 7a, FR SR |
| | LPG consumption in road transport | | |
| | Minimum and maximum temperatures by month | °C | SHMÚ |
| | Average air humidity | % | |
| | Average length of one ride | km | MDV SR - mobility survey 2014 |
| | Average time of one ride | min | |
| CO ₂ corrector factor | g/km | EEA database (Decision (EÚ) 2019/631) | |

Transport sector

| Data | Type of data | Units | Source |
|------------|--|---------|--|
| | ETBE share | % | Annual report under FQD 7a |
| | Fossil share C in FAME | % | Annual report under FQD 7a |
| | Share of heavy metals in fuels and oils | mg/kg | VÚRUP a.s. |
| | Share of aromatics hydrocarbons in gasoline | % | Annual report under FQD 8 |
| | Share of olefins in gasoline | % | |
| | Share of PAU in diesel oil | % | |
| | Cetin number of diesel oil | - | |
| | Share of sulphur in fuels | mg/kg | |
| Railway | Consumption of fuels | litters | ŽSSR, Cargo Slovakia, CER Slovakia |
| | Fuel consumption by locomotives/engine units | litters | ŽSSK |
| Navigation | Consumption of fuels | t | Slovenské plavby a prístavy a.s., TAM s.r.o. |

Data for air pollutants inventory

Energy sector

| Data | Type of data | Units | Source |
|--|---------------------------------|----------------------|-------------------------------------|
| Fugitive emissions – Solid fuels | Coal mined | t | Hornonitrianske bane Prievidza a.s. |
| | Termination of mining | | |
| Fugitive emissions – oil and natural gas | Oil extraction | t | ŠÚ SR |
| | Oil transportation | | |
| | Oil processing | | |
| | Extraction of NG | m ³ | SPP-distribúcia a.s. |
| | Processing of NG | | |
| | Storage of NG | | |
| | Distribution of NG | | |
| | Transit of NG | | |
| | Leaks during transit of NG | | |
| | Leaks in the distribution of NG | | |
| | | Eustream a.s. | |
| | | SPP-distribúcia a.s. | |

Energy sector

| Data | Type of data | Units | Source |
|-------------------------------|---------------------|----------------------|----------------------|
| Fugitive emissions - charcoal | Production | t | FAOSTAT |
| Reference approach | Natural gas | m ³ | Energy balance ŠÚ SR |
| | Solid fuels | t | |
| | Liquid fuels | t | |
| | Renewable resources | t | |
| | Calorific value | TJ/t | ŠÚ SR, SPP |
| | EF | tCO ₂ /TJ | |
| Liquid fuels - Refinery gases | Composition | - | Operator |
| | NCV | TJ/t | |
| | EF | tC/TJ | |
| | OXF | - | |
| | Carbon content | weight % | |
| Liquid fuels - Coke | NCV | TJ/t | Operator |
| | EF | tC/TJ | |
| | OXF | - | |
| | Carbon content | weight % | |
| Liquid fuels – heating fuels | NCV | TJ/t | Operator |
| | EF | tC/TJ | |
| | OXF | - | |
| Liquid fuels | NCV | TJ/t | ŠÚ SR |
| | NCV | TJ/t | EU-ETS reports |
| | EF | tC/TJ | |
| | OXF | - | |
| Solid fuels | NCV | TJ/t | ŠÚ SR |
| | NCV | TJ/t | EU-ETS reports |
| | EF | tC/TJ | |
| | OXF | - | |
| Gaseous fuels | Composition | - | SPP-distribúcia a.s. |

Energy sector

| Data | Type of data | Units | Source |
|-------------------------------------|---------------------------|-------------------------|------------------------------------|
| | NCV | kWh/m ³ | |
| | EF | tCO ₂ /TJ | |
| | Density | kg/m ³ | |
| Biomass | NCV | TJ/t | ŠÚ SR |
| | NCV | TJ/t | EU-ETS reports |
| | EF | tCO ₂ /TJ | |
| | OXF | - | |
| Industrial waste | Biological carbon content | weight % | EU-ETS reports |
| | Fossil carbon content | weight % | |
| | NCV | TJ/t | |
| | EF | tC/TJ | |
| | OXF | - | |
| Activity data – Liquid fuels | Consumption | t | ŠÚ SR ENER 724, ENER 723, ENER 725 |
| | | | EU-ETS reports - 1A1 a 1A2 |
| | | | NEIS small sources <20 employees |
| Activity data – Solid fuels | Consumption | t | ŠÚ SR ENER 724, ENER 723, ENER 725 |
| | | | EU-ETS reports - 1A1 a 1A2 |
| | | | NEIS small sources <20 employees |
| Activity data – Gaseous fuels | Consumption | thousand m ³ | ŠÚ SR ENER 724, ENER 723, ENER 725 |
| | | | EU-ETS reports - 1A1 a 1A2 |
| | | | NEIS small sources <20 employees |
| Activity data – Biomass | Consumption | t | ŠÚ SR ENER 724, ENER 723, ENER 725 |
| Activity data of operators with AMS | Consumption | thousand m ³ | Operators/verifiers ETS |
| Activity data from the refinery | Consumption | | Slovnaft |
| Activity data from iron production | Consumption | | NEIS database, EU-ETS |

Energy sector

| Data | Type of data | Units | Source |
|---|--|-------|------------------------------|
| Stationary combustion in manufacturing industries | Data on fuels for the production of electricity and steam and for combustion in stationary sources in industry, services, agriculture, and other sources | TJ | NEIS |
| Waste | Amount of incinerated and co-incinerated waste | t | NEIS |
| Cement | Amount of cement clinker | t | Cement production facilities |
| Households | Data on household fuels | t | SHMÚ |
| Data for air pollutants inventory | | | |

Waste sector

| Data | Type of data | Units | Source |
|--|---|-------------------------------|--|
| Real wage index | Statistical data for the current year | HDP/capita | ŠÚ SR |
| Amount of municipal waste | Data on the amount and method of disposal of produced municipal waste according to waste codes and method of disposal/recovery | kt | MŽP SR, RISO database, IS Odpady |
| Landfills database | Number and nature of landfills in Slovakia | number | Web page ŠGÚ DŠ |
| Amount of industrial waste | Data on the quantity and method of disposal of produced industrial waste according to waste codes and method of disposal/recovery | kt | MŽP SR, RISO database, IS Odpady |
| Consumption of biogas for energy purposes | Data on the total electricity produced and the composition of the burned landfill gas | MWh/m ³ | ÚRSO |
| Number of inhabitants of the Slovak Republic | In total | | ŠÚ SR |
| | Connection to the sewage system | % | MŽP SR / VÚVH / SAŽP |
| | Connection to sewerage and wastewater treatment plant (WTP) | % | |
| | No connection | % | |
| | Using septic tanks | % | odhad / výpočet |
| Using a domestic sewage treatment facility | % | | |
| Production of waste water (WW) Municipal WW | Municipal WW | | ŠÚ SR |
| | Quantity and composition of WW - input | m ³ /year, kg/year | SHMÚ |
| | Quantity and composition of WW - output | m ³ /year, kg/year | |
| | WW treatment technology | | |

Waste sector

| Data | Type of data | Units | Source |
|---|--|------------------------------|---|
| | Amount and composition of sludge | ton/year | VÚVH Bratislava |
| | Sludge handling methods | | |
| | Nitrogen content in sludge | % | |
| | Protein consumption per capita | g/inhab. day | ŠÚ SR |
| Production of waste water (WW) Industrial WW | Industrial WW | | SHMÚ / SAŽP |
| | Quantity and composition of WW - input | m ³ /year, kg/yea | |
| | Quantity and composition of WW - output | m ³ /year, kg/yea | |
| | WW treatment technology | ton/year | ŠÚ SR |
| | Amount and composition of sludge | | |
| Composting | Recovery of municipal waste – Reclamation of organic substances and composting | % | ŠÚ SR |
| | Recovery of industrial waste (Other thermal processes, pyrolysis...) | % | |
| Waste incineration | Amount of incinerated municipal waste | t | NEIS |
| | Amount of incinerated industrial waste | | |
| | Amount of hazardous waste burned | | |
| | Amount of incinerated hospital waste | | |
| | The number of bodies burned in the crematorium | | |
| Other waste | Number of burned cars, houses, industrial buildings | | Fire Engineering and Expertise Institute of the Ministry of the Interior of the Slovak Republic |
| Anaerobic digestion | The amount of nitrogen entering the biogas plant | kt | SHMÚ |

Data for air pollutants inventory

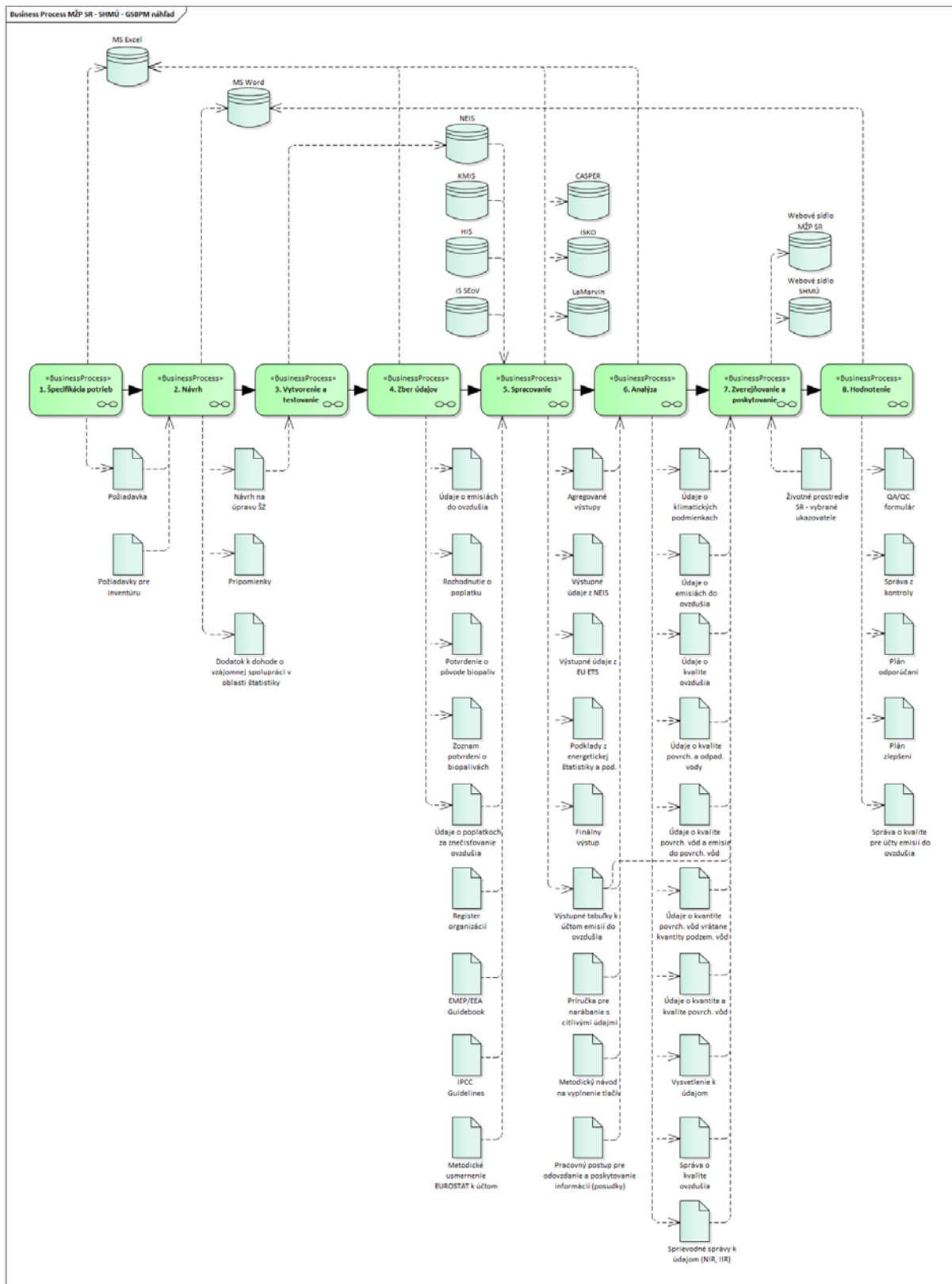
Residential sector

| Data | Type of data | Units | Source |
|--|---------------------------------------|-------|---|
| Heat supplied via CHS for apartments and non-residential buildings | Number of apartments connected to CHS | pc | Veolia Energia Slovensko, a.s. SPRAVBYTKOMFORT, a.s. Prešov Nitrianska teplárenská spoločnosť, a.s. |

Residential sector

| Residential sector | | | |
|--------------------|---|-----|---|
| | Heat sold/supplied apartments CH | kWh | STEFE Zvolen, s.r.o. Popradská energetická spoločnosť, s.r.o. TEPELNÉ HOSPODÁRSTVO spoločnosť s ručením obmedzeným Košice Trnavská teplárenská, a.s. |
| | Sold/supplied heat for DHW apartments | kWh | STEFE Banská Bystrica, a. s. Byterm, a.s. Osbd Žilina |
| | Sold/supplied heat of non-residential buildings CH | kWh | Martinská teplárenská, a.s. Bardterm, s.r.o. TEPLÁREŇ Považská Bystrica, s.r.o. CZT Ružomberok |
| | Sold/supplied heat of non-residential buildings DHW | kWh | Energobyť s.r.o. Humenné |

Annex No. 2: Structure of processes of the NS SR



Annex No. 3: QA/QC plans

| Internal QA/QC plan for GHG | | | | | |
|-----------------------------|--|--|---|--------------------------------|---|
| Activity | | Responsible | Check | Time | Record |
| 1. | Evaluation of Improvement plans | Sectoral experts NIS coordinator Deputy of NIS coordinator | Quality manager MŽP SR – NFP | 15. 01. | Improvement plan for every sector |
| 2. | Tasks and financial plan of NIS – preparation | NIS coordinator Deputy of NIS coordinator | MŽP SR – NFP Quality manager Head of the SHMÚ | 12. 02. | Information on budget, capacity (personal, external, internal), training plan, meetings and business trips plan, plan of QA/QC activities for the inventory year. |
| 3. | Update of capacity incorporating updates for each sector | Sectoral experts (SE) Deputy of SE | MŽP SR – NFP Quality manager Head of the SHMÚ | 28. 02. | Responsibilities matrix Description of work activities |
| 4. | Work assignment and contracts signing for each sector | NIS coordinator Deputy of NIS coordinator | MŽP SR - NFP Head of the SHMÚ | 31. 03. | Frame contracts with the sectoral experts Specification of tasks for a given year (improvement plan) Nomination letters for sectoral experts |
| 5. | Plan of QA/QC activities for the emission inventory on overall and sectoral level | Sectoral experts (SE) Deputy of SE | NIS coordinator Deputy of NIS coordinator Quality manager | 10. 03. | Description QA/QC activities in each sectoral chapters |
| 6. | Key sources and uncertainty management for each sector | Sectoral expert for uncertainty Sectoral experts NIS coordinator | Deputy of NIS coordinator Quality manager | 15. 03. | Report on key sources and uncertainty evaluation Template for the key sources and uncertainty evaluation |
| 7. | Final evaluation of emission data on sectoral level based on the external audit of the European Commission | Sectoral experts NIS coordinator | Deputy of NIS coordinator Quality manager MŽP SR – NFP | 31. 05. | Verification protocols Description of changes Updated sectoral report |
| 8. | Workshop – meeting of experts, ministries, SNE; Program: evaluation of results, finding from the reviews, proposals for | Sectoral experts NIS coordinator Deputy of NIS coordinator | MŽP SR – NFP Quality manager | April September December | Report from the meeting |

Internal QA/QC plan for GHG

| Activity | | Responsible | Check | Time | Record |
|----------|---|------------------|---|--------------|--|
| | improvement, proposal for the inventory plan for next NIR | | | | |
| 9. | Completeness check of emission inventory | Sectoral experts | NIS coordinator Deputy of NIS coordinator Quality manager MŽP SR – NFP | 30. 09. | Report from completeness check |
| 10. | Methodical updates, recalculation list on sectoral level, according to IPCC 2006 GL | Sectoral experts | NIS coordinator Deputy of NIS coordinator Quality manager | 31. 10. | Report of emission for each sector |
| 11. | Sectoral final reports delivery | Sectoral experts | NIS coordinator Deputy of NIS coordinator Quality manager | 30. 11. | Delivery protocols Drafts of sectoral reports |
| 12. | Participation in individual evaluations and cooperation in preparing of view on the review assessment by the UNFCCC secretariat | Sectoral experts | NIS coordinator Deputy of NIS coordinator Quality manager | continuously | Sectoral assessment reports |

External QA/QC plan for GHG

| Activity | | Responsible | Check | Time | Record |
|----------|---|---|---|---------|---|
| 1. | SVK Annual Report submission | NIS coordinator Sectoral experts National administrator | Ministry of Environment of the Slovak Republic – NFP Deputy of NIS coordinator | 15. 01. | Annual Report - draft Elements of NIR SVK - draft CRF tables SEF tables |
| 2. | Revised Annual Report of the SVK | NIS coordinator Sectoral experts National administrator | Ministry of Environment of the Slovak Republic – NFP Deputy of NIS coordinator | 15. 3. | Indicators CRF tables NIR SVK |
| 3. | Submission of the Report according to Article 27 (5) of Regulation (EU) 2018/1999 | NIS coordinator Ministry of Environment of the Slovak Republic | EK | 15. 3. | Initial, preliminary and non-binding annual estimates of emissions and removals from cropland management and grazing land |

External QA/QC plan for GHG

| External QA/QC plan for GHG | | | | | |
|-----------------------------|---|---|---|-------------------------|--|
| Activity | Responsible | Check | Time | Record | |
| | Ministry of Agriculture and Rural Development of the Slovak Republic (National Forest Centre, Soil Science and Conservation Research Institute) | | | Management. | |
| 4. | Report on Policies and measures and projections | Projection coordinator Ministry of Environment of the Slovak Republic NIS coordinator Sectoral experts | Ministry of Environment of the Slovak Republic – NFP Deputy of NIS coordinator | 15. 3. | Report and tables |
| 5. | ESD annual review | NIS coordinator Deputy of NIS coordinator Sectoral experts | Technical Expert Review Team | 15. 2.-20. 4. | Report from the review until 30.6.(depending on the findings and their solution) |
| 6. | Nomination letters for the sectoral experts | Ministry of Environment of the Slovak Republic – NFP | Deputy of NIS coordinator | 15. 4. | Nomination Letters List of nominated sectoral experts |
| 7. | National inventory submission to the UNFCCC - GHG emission inventory - National inventory report - Information from National Registry | NIS coordinator Sectoral experts National Registry | Deputy of NIS coordinator Ministry of Environment of the Slovak Republic – NFP | 15. 4. | CRF tables NIR SVK SEF tables NIR SVK published on the official web of the UNFCCC |
| 8. | Publicity of the SVK NIR and emissions data on the official web of the SVK NIS | NIS coordinator Deputy of NIS coordinator | MŽP SR – NFP | 15. 5. 2021 | Update of data on https://oeab.shmu.sk |
| 9. | Completion and updating of the NIR SVK on the basis of Initial Assessment by the EU review. | NIS coordinator Sectoral experts | Deputy of NIS coordinator Ministry of Environment of the Slovak Republic – NFP | 6 weeks after 15. 4. | Repeated Emission GHG inventory and NIR SVK submission (if relevant) |
| 10. | Audit of the status of the preparation of the emission GHG inventory – check days. | NIS coordinator Sectoral experts | Deputy of NIS coordinator Ministry of Environment of the Slovak Republic – NFP | 30. 6. 30. 9. | Report from the coordination meetings of the NIS |
| 11. | Proxy Inventory SVK | NIS coordinator Sectoral experts | Deputy of NIS coordinator Ministry of Environment of the Slovak Republic – NFP | 31. 7. | Proxy inventory of GHG |

External QA/QC plan for GHG

| Activity | | Responsible | Check | Time | Record |
|----------|---|---|---|-----------|---|
| 12. | International review of the inventory coordinated by the secretariat UNFCCC | NIS coordinator Deputy of NIS coordinator Sectoral experts Ministry of Environment of the Slovak Republic – NFP | Expert Review Team coordinated by the secretariat UNFCCC | September | Preliminary Report from the International review of the NIR SVK |
| 13. | Data delivering to the Statistical Office of the Slovak Republic. Distribution of the SVK NIR to the relevant institutions. | NIS coordinator Sectoral experts | Deputy of NIS coordinator Ministry of Environment of the Slovak Republic – NFP | 31. 10. | Statistical record Emission GHG inventory |
| 14. | Measures and objectives for improvements in QA/QC procedure of GHG emission inventory for relevant sectors based on the preliminary results of the review NIR SVK | Sectoral experts Deputy of NIS coordinator | NIS coordinator Ministry of Environment of the Slovak Republic – NFP | 30. 11. | Report and Improvement plan for the inventory |

QA/QC plan for air pollutant inventory

| Activity | | Responsible | Check | Time | Record |
|----------|--|---------------------------------|-------------------------------------|--------|---|
| 1. | Submission of emission balance results for emission inventories by sector | Sectoral experts | Quality manager Coordinator | 15. 1. | Inventory of emissions in NFR 14 categorizations for the sector and for the inventory |
| 2. | Evaluation of the improvement plan | Sectoral experts Coordinator | Quality manager | 15. 2. | Improvement plan for each sector |
| 3. | Reporting of the national inventory for all sectors to EC and UNECE | Coordinator | Quality manager SAŽP | 15. 2. | Electronic confirmation for the MŽP SR and SAŽP on timely reporting of national inventories |
| 4. | Assigning responsibilities to team members, incorporating updates for individual sectors | Sectoral experts | Coordinator Quality manager | 28. 2. | Description of work activity |
| 5. | Recalculations and correction of erroneous data | Sectoral experts | Quality manager Coordinator | 22. 2. | Evaluation of control |
| 6. | Analysis of key categories - trend and level assessment | Coordinator | Quality manager Sectoral experts | 22. 2. | Resulting evaluation of key categories |

QA/QC plan for air pollutant inventory

| Activity | | Responsible | Check | Time | Record |
|----------|---|--|--------------------------------|-----------------------|---|
| 7. | Submission of sectoral reports | Sectoral experts | Quality manager Coordinator | 1. 3. | Sectoral reports |
| 8. | Compilation and reporting of a complete national inventory report | Coordinator | Quality manager SAŽP | 15. 3. | Informative inventory report on the national inventory |
| 9. | In-depth review of inventory under CLRTAP and NECD | Sectoral experts Coordinator | Coordinator | May - June | Draft review report |
| 10. | In-depth review of the inventory report under NECD | Sectoral experts Coordinator Quality manager | Technical team of experts | November | Final report from the review process |
| 11. | Preparation of the improvement plan | Sectoral experts Coordinator | Quality manager | September | Improvement plan for each sector according to recommendations from the review |
| 12. | Coordination meeting - meeting of experts Program: evaluation of the results and conclusions of the emission inventory control, submission of a proposal for improvement for the current year, development of an improvement plan | Sectoral experts Coordinator | Quality manager | September November | Minutes of the meeting |