Experience in creating and drawing up the State of the Environment Report in the Slovak Republic

SLOVAK ENVIRONMENT AGENCY


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SLOVENSKEJ REPUBLIKY
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1. Basic information

- *From what the necessity has arisen to draw up national State of Environment Report*

The Slovak Republic has incorporated in its Constitution the right of every citizen to a favourable environment and the duty to protect and improve it, while the state has to take care of considerate utilization of natural resources, ecological balance and effective care of the environment. These basic environmental rights and duties are completed by the right of everybody to timely and complete information on the environmental condition and causes and consequences of this state. We all have the right guaranteed by the Constitution of the Slovak Republic to be informed about the environmental situation in our country.

> "Art. 45
> Everyone has the right to timely and complete information about the state of the environment and the causes and consequences of its condition."

The Constitution of the Slovak Republic is enacted by Act No 460/1992 Coll., as subsequently amended. It also considers the priority to be increasing the environmental awareness and informing of both professional and non-professional public of the state of the environment, the causes and consequences of this condition, but also of the care of the environment as a conscious human activity.

- *Beginning of the process and legal framework*

At the beginning of the 1990s, the Ministry of Environment of the Slovak Republic acceded to drawing up the first State of Environment Report (SOE report) in the history of independent Slovakia in order to improve the situation in informing the public of the environmental situation. This first report was titled "Environment of the SR" and was published in 1994 with the number of 1,500 copies. It has 520 pages and it evaluated the State of the Environment in 1992-1993. Since then, the report has been published annually and in 2017 its 24th edition was published.

SOE report of the SR is published pursuant to Act No 17/1992 Coll. on environment, as subsequently amended by Act No 211/2000 Coll. on free access to information; it provides information of the environmental condition in a comprehensive and well-arranged form. Based on section 33b the Ministry of Environment of the Slovak Republic publishes annually the state of environment report in the Slovak Republic. This Act also sets the deadline until when the report must be published, i.e. December 15 of the following year. For this purpose, the competent central authorities are obliged to provide data and source materials until August 31 of the following year. The report must be accessible at the Ministry of Environment of the Slovak Republic (MoESR), the Slovak Inspectorate of the Environment (SIE) and at the district offices.

Section 7 of Act No 205/2004 Coll. on the collection, storage and dissemination of information on the environment as amended contains the information about the fact that the SOE report must include in particular data on the environmental condition and causes and consequences of this condition as well as data on trends of its development and measures on the protection and improvement of the environment, including international cooperation.

In addition to that, it also points out to the most important environmental activities at global, European and national level.

Identification and subsequent assessment of the development of some environmental issues and the necessity of their solution is helpful in the creation of the national legislation.

Regular publishing of evaluation SOE reports also results from international obligations **to which the Slovak Republic has acceded.**

→ **The Convention on Access to Information, Public Participation in Decision-Making and Access to Justice in Environmental Matters (the Aarhus Convention)**, in accordance with which, each Party shall, at regular intervals not exceeding three or four years, publishe and disseminate a national report on the state of the environmental, including information on the quality of the environment and information on pressures on the environment.

→ **Directive 2003/4/EC of the European Parliament and of the Council on public access to environmental information, repealing Council Directive 90/313/EEC**, in accordance with which, without prejudice to any specific reporting obligations laid down by Community legislation, Member States shall take the necessary measures to ensure that national, and, where appropriate, regional or local reports on the state of the environment are published at regular intervals not exceeding four years; such reports shall include information on the quality of, and pressures on, the environment.

- *Objective*

Make accessible information on the condition, causes and consequences of changes in the environment to the general public, thus fulfil the proclaimed constitutional right of the citizen to be informed about the environmental situation in the country. Document SOE report, its development, main causes and consequences of this development as well as results of measures focused on its improvement, following from the Strategy of State Environmental Policy adopted by the Government of the SR and the National Council of the SR in 1993. Following the strategy, these measures in the individual sectors have been summarized by two National Environment Action Programmes (NEAP) approved by the Government of the SR. The report also reacts to the evaluation of fulfilment of international obligations to which the SR has acceded in the sphere of the care of environment as well as some other strategic and conceptual documents that have been adopted in order to protect and create the environment.

The objective of the assessment of the state of environment in the form of the SOE report is to provide:

- Information on the state of the environment in the SR,
- Information on causes and consequences of this condition,
- Information on pressures exerted on the environment by various human activities, but also natural processes,
- Information on measures and tools of the environmental policy the objectives of which is to keep the environment in the best possible quality for future generations.

With respect to the cross-sectional character of environmental issues, any evaluations and data provided in the report represent in total the result of work of a wide group of experts from state administration authorities and professional organisations in the sector of environmental care, but also from other interested and cooperating ministries, in particular the Ministry of Agriculture and Rural Development of the Slovak Republic, the Ministry of Health of the Slovak Republic, the Ministry of Education, Science, Research and Sport of the Slovak Republic, the Ministry of Culture of the Slovak Republic, the Ministry of Interior of the Slovak Republic, the Ministry of Economy of the Slovak Republic, the Ministry of Transport and Contraction of the Slovak Republic, the Statistical Office of the Slovak Republic and the Nuclear Regulatory Authority of the Slovak Republic. A number of results and information are reflected in the report achieved during the environmental monitoring, mapping of the state of the environment and its components, statistical monitoring and modelling.

- *Form, target group and periodicity*

The SOE report is published annually until December 15 of the respective year in the printed form. In addition, it is also accessible on-line at the website of the Ministry of Environment of the Slovak Republic and Enviroportal.

The SOE report is made accessible to the public every year at all state administration authorities for the environment, but also in environmental organisations, libraries, universities and selected secondary schools, in some museums and educational facilities. It becomes an aid for work of editors, teachers, researches, state employees, employees of self-governing authorities, environmental management of enterprises. It is used for activities of non-governmental organisations of not only environmental focus. It explains, analyses, provides positive and negative aspects, facts without any prettification.

- *Author team of experts at the Slovak Environment Agency (SEA)*

The Ministry of Environment of the Slovak Republic has delegated the preparation of the SOE report draft report to the Slovak Environment Agency (SEA). The assessment of the state of environment is ensured by staff at the SEA through a team of 10 experts in the Unit of Environmental Analyses and Assessment. Drawing up of the report on the environmental protection is coordinated by the project manager and the individual chapters are ensured by experts in spheres in question. At the SEA, the expert coverage is ensured as follows:

→ expert – waste and green economy
→ expert – air and climate change
→ expert – biota and nature protection, forestry
→ expert – water and transport
→ expert – soil and agriculture
→ expert – natural sources and environmental risks
→ expert – energy sector
→ expert – industry and economic instruments
→ expert – tourism

In addition to drawing up the draft of th SOE report, this team ensures annually environmental indicator assessment, some other types of evaluation the reports according to the approved Publication Plan. At the same time, it also cooperates in creating and developing the Information System of Indicators the main purpose of which is to simplify processing, create one space for a huge quantity of data, and unify outputs. In addition, its task is to provide information to the public or expert opinions as well as cooperate with some other international organisations, such as the OECD and the EEA.

2. Philosophy and drawing up of the report

In 2016, based on the evaluation of needs and experience related to publishing the SOE reports, the mechanism of drawing up was modified as follows:

- introducing the system of publishing the report on yearly bases,
- introducing the system of publishing the report on yearly bases and every four years the extended version will be published (four-year report),
- differentiating the content and scope of the annual and four-year report,
- differentiating the form of annual and four-year report (annual – printed +PDF+on-line version at the web, four-year – printed + interactive version at the web),
- differentiating the language mutation of the report (annual – Slovak language, four-year – Slovak + English languages).

General content of the State of Environment Report in the Slovak Republic

FOREWORD
BASIC INFORMATION OF THE SLOVAK REPUBLIC
Settlement and demographic development (number of citizens, increases, decreases, life expectancy, size of areas, environmental regionalization, GDP)
SUMMARY EVALUATION OF THE ENVIRONMENTAL SITUATION IN THE SLOVAK REPUBLIC
COMPONENTS OF THE ENVIRONMENT AND THEIR PROTECTION
AIR
Key questions and key findings Emission situation Air pollution situation Threatening of the ozone layer of the Earth
WATER
Key questions and key findings Surface water Ground water Supplying citizens by drinking water Waste water discharging and treatment Bathing water
ROCKS
Key questions and key findings Geological factors of the environment Geothermal energy Old mining works Mineral resources
SOIL
Key questions and key findings Balance of areas Soil quality
FLORA, FAUNA AND PROTECTED AREAS OF NATURE
Key questions and key findings Flora Fauna Biotopes Care of protected parts of the nature


OBSAH

ZOZNAM FOTOGRAFIÍ

LANDSCAPE
Key questions and key findings Development trends in the structure of areas Fragmentation of countryside Care of urban and rural environment Monument fund World heritage Geo parks Environmental burdens
IMPACTS OF ECONOMIC SECTORS ON THE ENVIRONMENT
Key questions and key findings Manufacturing Mining industry Energy industry Transport Agriculture Forestry Recreation and tourism
MATERIAL FLOWS
Domestic material consumption Material intensity of the economy
WASTE
Key questions and key findings Waste and waste management Packaging and waste packaging Transboundary movement of waste – waste import, export and transit
CLIMATE CHANGE
Key questions and key findings Climate protection (targets, situation, trends and projections of greenhouse gas emissions, emission quotas trading) Impacts of the climate change and adaptation on unfavourable consequences of the climate change (manifestations and trends of the climate change, impacts of the climate change on the individual areas, adaptation measures)
RISK FACTORS IN THE ENVIRONMENT
PHYSICAL RISK FACTORS
Key questions and key findings Non-ionizing radiation Ionizing radiation Nuclear facility activities Noise Noise
CHEMICAL RISK FACTORS
Key questions and key findings Xenobiotics in the food and forage
ACCIDENTS AND NATURAL DISASTERS
Key questions and key findings
Extraordinary deterioration of water quality
Extraordinary deterioration of air quality
Fire extent
Floods
GENETIC TECHNOLOGIES AND GENETICALLY MODIFIED ORGANISMS
Key questions and key findings
Using genetic technologies and genetically modified organisms

CARE OF THE ENVIRONMENT
ENVIRONMENTAL POLICY
ENVIRONMENTAL ORGANISATION
ENVIRONMENTAL LAW
ENVIRONMENTAL IMPACT ASSESSMENT
INTEGRATED PREVENTION AND POLLUTION CONTROL
PREVENTION AND REMEDY OF ENVIRONMENTAL DAMAGES
PREVENTION OF MAJOR INDUSTRIAL ACCIDENTS
ENVIRONMENTAL ASSESSMENT AND PRODUCT LABELLING
ENVIRONMENTAL MANAGEMENT AND AUDIT SYSTEM
GREEN PUBLIC PROCUREMENT
ENVIRONMENTAL EDUCATION AND TRAINING
ENVIRONMENTAL MONITORING AND INFORMATION SYSTEM
ENVIRONMENTAL ECONOMY
INTERNATIONAL COOPERATION
THEME OF THE YEAR
LIST OF SELECTED USED ABBREVIATIONS

Note: Chapters on grey background are included in four-year report

- *Structure of the SOE report and methodical approach to the creation of the content of chapters*

Principles of the creation of chapters:

→ design data in a use-friendly form (present a theme in the most understandable form, use graphical elements for easier understanding)
→ assess the area in a well-arranged, unambiguous form, using the most current information
→ evaluate the sphere in an address and specific way – condition, development, achieving of targets, directing towards targets
→ compare the situation in Slovakia with the EU countries

The structure of the SOE report and brief review of the chapters:

1. BASIC INFORMATION OF THE SLOVAK REPUBLIC

The chapter is focused on a brief and well-arranged evaluation of selected indicators evaluating the Slovak Republic – the number of citizens, increases, decreases, life expectancy, size of areas, environmental regionalization, GDP.

2. COMPONENTS OF THE ENVIRONMENT AND THEIR PROTECTION

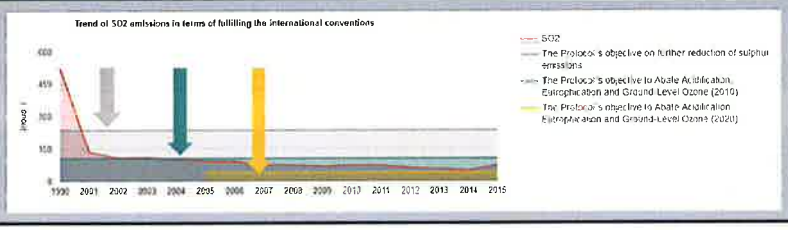
The chapter deals with the evaluation of the condition, development and care of components of the environment that are defined under the conditions of the SR as follows: air, water, rock environment, soil, and biota. It contains Key questions and key findings aimed at defining and describing, in a well-arranged and brief form, essential information concerning the individual elements. The questions are designed so that they are directed at findings how the SR succeeds in fulfilling targets defined in international or national obligations or capture and describe the development of substantial factors for which no targets are defined.
Philosophy of drawing up is the same in more chapters.

Examples of key question and key finding

Key question Is Slovakia fulfilling its obligations given by international conventions in the area of air protection?
Key finding Slovakia is fulfilling its obligations given by international legislation in the area of air protection without any shortcomings.
Key question Are the air pollutants limit values for human health protection complied with?
Key finding In 2012 a number of monitoring stations detected exceeded limit values for selected air-borne pollutants (NOX, PM10) designated to ensure human health protection.
Key question What is the share of the agricultural land types threatened by erosion?
Key finding Approximately 38.8 % of total agricultural land size was threatened by water erosion in 2015, while 6.9% was threatened by wind erosion. Since the end of the 2. monitoring cycle (year 2001) up to the present day, potential water erosion has been on decline. Sizes of the potential wind erosion have not been high and have not significantly changed over the recent years.
Key question What is the situation and trend in the use of water in terms of preserving the water sources?
Key finding Volumes of water usable per capita fluctuate due to climate conditions. Percentage of usable water abstraction after 2000 does not even reach 10 %, the only exception being the years 2002-2004. Surface water abstraction after 1995 showed a significant decline despite minimal year-to-year increments and reductions. In 2015, volumes of abstracted surface water was 69.4 % of abstracted volumes in 1995, and 66.4 % of abstracted volumes in 2000. Between the years 2014 and 2015 abstracted volumes grew by 3.9 %.

Subsequently, more detailed information can be found in some other texts of chapters in a more detailed verbal and graphical description with use of tables, graphs as well as map displaying.

Examples of the process of identification and evaluation of a selected key indicator

<table>
<tr><td>Key question</td><td>Is Slovakia fulfilling its obligations given by international conventions in the area of air protection?</td></tr>
<tr><td>Link to documents/targets</td><td><u>Protocol of further reduction of sulphur emissions</u>
The binding targets for the SR is reduction of SO_2 emissions by 60 % (until 2000), by 65 % (until 2005) and by 72 % (until 2010) with respect to the relative year of 1980.
<table>
<tr><td>Year</td><td>1980 (starting year)</td><td>2000</td><td>2005</td><td>2010</td></tr>
<tr><td>SO_2 emissions (thous. tons)</td><td>843</td><td>337</td><td>295</td><td>236</td></tr>
<tr><td>Reduction of SO_2 emission (%)</td><td>100</td><td>60</td><td>65</td><td>72</td></tr>
</table>
<u>Protocol of reduction of acidification, eutrophisation and ground-level ozone</u>
The SR's obligation is to reduce SO_2 emissions until 2010 by 80 % in comparison with 1990.
In 2012, the protocol targets were revised, i. e. to decrease emissions in 2020 compared to the starting year of 2005 as follows:
<table>
<tr><td>Pollutant</td><td>SO_2</td></tr>
<tr><td>% reduction</td><td>57</td></tr>
</table></td></tr>
<tr><td>Output</td><td> 
</td></tr>
</table>

3. LANDSCAPE

The chapter deals with the evaluating of selected elements in the country and instruments used in taking care of such elements, it evaluates development trends in the structure of areas, country fragmentation, the care of the municipal and rural environment, the conservation fund including localities included in the world heritage, geo parks, environmental burdens.

4. IMPACTS OF THE ECONOMIC SECTORS ON THE ENVIRONMENT

The chapter deals with the relation of the following six sectors (Manufacturing, Mining industry, Energy industry, Transport, Agriculture, Forestry, Recreation and tourism) to the environment from the perspective of:

→ Trends in selected indicators evaluating the given sector, having a direct link to the environment

Examples: The transport sector – the trend in the number of transported persons and outputs according to the individual types of transport – road, railway, water, air. The agricultural sector – trend in consumption of artificial fertilizers and pesticides.

→ Trends in interactions of sectors and the environment (demanding character in terms of resources, impacts on the environment)

Examples: The sector of energetics – greenhouse gas emissions from energetics, transport – land confiscation by the transport infrastructure.

5. MATERIAL FLOWS, WASTE

The chapter deals with the evaluation of the material intensity of the economy, waste production, handling waste according to the individual flows of waste, packages and package waste, cross-border transport of waste – import, export and transit of waste.

6. CLIMATE CHANGE

The chapter deals with the evaluation of the situation, trends and projections of greenhouse gas emissions, emission quotas trading. Climatic and hydrological elements and their development in a long-time horizon are evaluated.

7. RISK FACTORS IN THE ENVIRONMENT

The chapter deals with the evaluation of physical, chemical and selected biologic risk factors, breakdowns, natural disasters including fires and floods.

8. CARE OF THE ENVIRONMENT

The chapter evaluates the situation in applying selected instruments of the care of the environment, such as green public procurement, environmental management, environmentally suitable product, assessment of impacts on the environment, economic instruments.

9. INTERNATIONAL COOPERATION

The chapter describes participation of the SR as part of the international cooperation, in the sphere of care of the environment – involvement in international conventions, multilateral and bilateral cooperation.

THEME OF THE YEAR

The chapter is added to the content solving the principal theme ("Theme of the Year") that is agreed with the Ministry of Environment of the SR. Selecting the theme and its evaluation is directed at evaluating the condition and results of applying measures taken in relation to defined strategic and conceptual targets (e.g. health and the environment, green growth of the Slovak economy, efficiency of resource utilization, sustainable consumption and production, etc.).

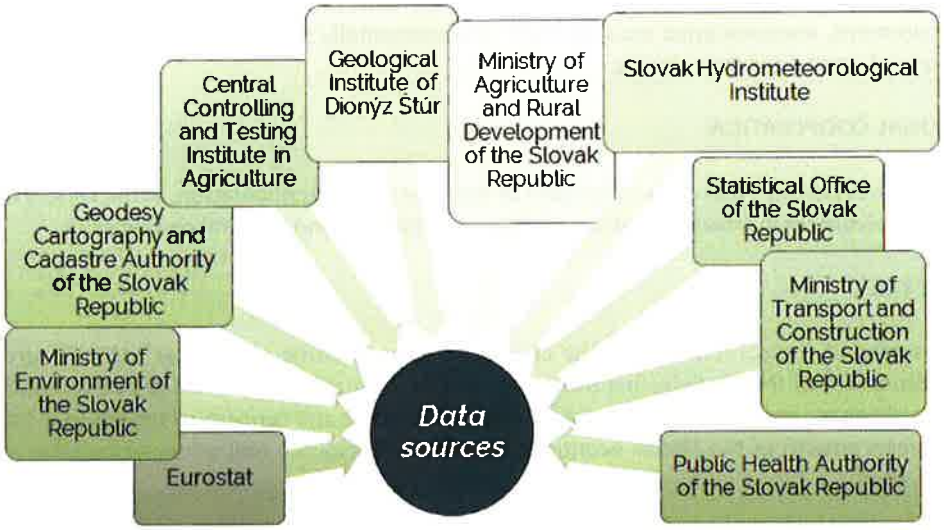
- *Process of the preparation of the report (timeline)*

3. Database of information

SOE reports provide **verified statistical data and information** coming both from source materials of the Statistical Office of the Slovak Republic, professional organisations of the ministry:

1. Ministry of Environment of the Slovak Republic (MoE SR),
2. Ministry of of Agriculture and Rural Development of the Slovak Republic (MoARD SR),
3. Ministry of Economy of the Slovak Republic (MoEc SR),
4. Ministry of Transport and Construction of the Slovak Republic (MoTC SR),
5. Ministry of Health of the Slovak Republic (MoH SR),
6. Ministry of Education, Science, Research and Sport of the Slovak Republic (MoESRS SR),
7. Ministry of Interior of the Slovak Republic of the Slovak Republic (MoI SR),

and from databases of other central state administration authorities and their professional organisations. For the purposes of international comparison, including the EU countries, data of foreign organisations, such as Eurostat and the OECD, are used.



The Slovak Environment Agency (SEA) in cooperation with the Ministry of Environment of the Slovak Republic reviews annually the content and structure of the SOE report for the following year with respect to the development of situation and necessity to solve current problematic spheres being revealed over time. Based on these facts, the individual experts also review a set of data that are subsequently demanded from cooperating professional organisations.

The following table shows **professional organisations** for the individual spheres providing data in the highest possible extent for the SOE report:

Air	*SHMI, MoE SR*
Water	*SHMI, WRI, PHA SR, SIE*
Rocks	*SGIDS*
Soil	*NAFC - SSCRI, CCTIA, GCCA SR*
Flora, fauna and protected areas of nature	*SNC SR, MoE SR*
Landscape	*MB SR, MoC SR, SEA*
Industry	*SHMI, MoE SR, GCCA SR, WRI*
Mineral raw material mining	*MMO, SGIDS*
Energetics, heat generation and gas industries	*SO SR, NRA SR, SE a. s., SEPS, MoEc SR, SHMI, MoE SR*
Transport	*SO SR, TRI, SHMI*
Agriculture	*SO SR, CCTIA, GCCA SR, SHMI, NAFC – PPRI*
Forestry	*MoARD SR, NFC, SO SR, GCCA SR*
Recreation and tourism	*SNC SR, SO SR*
Material demanding character of the economy	*Eurostat*
Waste	*MoE SR, SO SR*
Climate change	*SHMI, MoE SR*
Environmental economy	*SO SR, Envirofond*

MoARD SR - Ministry of Agriculture and Rural Development of the Slovak Republic, SO SR – Statistical Office of the Slovak Republic, MoE SR – Ministry of Environment of the Slovak Republic, SHMI - Slovak Hydrometeorological Institute, SNC SR - State Nature Conservancy of the SR, NFC – National Forest Centre, SGIDS – State Geological Institute of Dionýz Štúr, WRI – Water Research Institute, PHA SR – Public Health Authority of the Slovak Republic, SIE – Slovak Inspectorate of the Environment , CCTIA - Central Control and Testing Institute in Agriculture, NAFC – SSCRI –National Agricultural and Food Centre – Soil Science and Conservation Research Institute, MB SR -Monuments Board of the Slovak Republic, GCCA SR - Geodesy, Cartography and Cadastre Authority of the Slovak Republic, MoC SR – Ministry of Culture of the Slovak Republic, MMO – Main Mining Office, NRA SR - Nuclear Regulatory Authority of the Slovak Republic, SE a. s. - Slovenské elektrárne, joint-stock company (Slovak Power Stations), SEPS – Slovenská elektrizačná prenosová sústava a.s. (Slovak Electricity Transmission System), MoEc SR – Ministry of Economy of the Slovak Republic, TRI - Transport Research Institute, SEA –Slovak Environmental Agency, NPPC – PPRI - National Agricultural and Food Centre – Plant Production Research Institute

Overview of selected organisations with brief description of their activities:

Statistical Office of the Slovak Republic (SO SR)

The Statistical Office of the Slovak Republic is a central authority of state administration of the Slovak Republic for the sphere of state statistics. Statistical ascertainments are governed by the Decree Programme of State Statistical Ascertainments for Three-Year Periods drawn up by the Office in cooperation with ministries and state organisations. The programme includes all important and necessary ascertainment including ascertainment performed by other central authorities and ministries. In addition to ascertainment included in the programme, the Statistical Office also performs special ascertainment for natural entities (for example, census of citizens, houses and flats, agricultural statements, etc.).

Slovak Hydrometeorological Institute (SHMI)

The Slovak Hydrometeorological Institute is a specialized organisation performing hydrological and meteorological services at the national and international levels. It monitors quantitative and qualitative parameters of the air and water condition in the territory of the Slovak Republic, collects, verifies, evaluates, archives and interprets data and information of the condition and regime of air and water, describes events in the atmosphere and hydrosphere, draws up and publishes meteorological and hydrological forecasts, warnings and information. It provides data, information and results of studies to both users and the public.

National Agricultural and Food Centre – Soil Science and Conservation Research Institute (NAFC - SSCRI)
The Soil Science and Conservation Research Institute is a state-funded institution that is focused on the development of knowledge and transfer of knowledge into practice in the sphere of soil conservation and effective utilization in the agricultural landscape and any affected natural resources.
The activities of VÚPOP consist of conducting applied research and a number of professional and expert activities for needs of its founder (the Ministry of Agriculture and Rural Development of the SR), state administration, land users and wide professional public.

State Geological Institute of Dionýz Štúr (SGIDS)
The State Geological Institute of Dionýz Štúr is a state-funded scientific and research institution, with the history going back to 1940. It ensures the performance of state geological service in the Slovak Republic.
The activity of VÚPOP is focused on geological research and survey, geological maps, mineral raw materials, geological hazards, underground water, geothermal energy, geo fund (registration, collecting, record-keeping and making accessible of results of geological works), electron micro-analyzer, isotope analysis, technologic laboratories, central geological library, geoanalytical laboratories, the creation and using the information system in geology. SGIDS performs objective consultative, lecturing, consultation and advisory activities and processes source materials for state administration authorities.

State Nature Conservancy of the Slovak Republic (SNC SR)
The State Nature Protection of the Slovak Republic is a professional organisation of nature protection under the direct management of the Ministry of Environment of the SR with Slovakia-wide competence, focused on ensuring professional activities in conducting the state protection of nature and landscape. The basic activities of SNC SR includes ensuring the general and specific protection of nature and landscape, species protection of animals, plants, minerals and fossils, woody plant protection, practical care of specially protected parts of nature and landscape and the creation of documentation of the nature protection. It also fulfils tasks in the sphere of upbringing, education, promotion, editorial activities and in the sphere of international cooperation.

National Forest Centre (NFC)
The National Forest Centre is a state-funded institution reporting to the Ministry of Agriculture and Rural Development of the Slovak Republic. It ensures tasks of the sector in the following spheres: Forest research, Forest consultancy and education, Information system of forestry, Economic forest regulation.

Most of the **obtained data and information** come from **the environmental monitoring**, whereby objective information is ensured necessary for the decision-making, managing, control and science and research sphere, but also informing of the public.

The concept of the environment monitoring system of the territory of the SR was adopted by the Government Resolution No 449 of May 26, 1992. It defines the environment monitoring as systematic observation defined thoroughly over time and within space of exactly specified characteristics (*attributes*) of components of the environment or their impacts on the environment, operating (usually in the points making up the monitoring network) that represent with a certain rate of the explanatory ability the monitored sphere and in total a larger territorial unit.

The monitoring of the environment of the SR is based on the monitoring system, covering the territory of the SR. It consists of the following three basic, mutually completing levels:

- **The area-wide monitoring of the environment**
- The regional monitoring of the environment
- The special-purpose (local) monitoring of the environment

The basic elements of the area-wide monitoring of the environment of the SR are **partial monitoring systems** (hereinafter referred to as **PMS**) that are fully ensured by appointed guarantors. Coordination within the partial monitoring system is ensured by an appointed guarantor by means of a professional group composed of experts representing decisive professional organisations participating in monitoring activities in the partial monitoring system in question. According to the concept, information obtained in the individual PMSs becomes, by means of partial information systems, making up the information superstructure of each PMS, a part of the information system of the environment in the SR. The environmental monitoring, together with the information system

https://www.enviroportal.sk/, form one means necessary in decision-making process in the sphere of environmental protection and creation.

According to the adopted concept, the subject of the environmental monitoring includes the following spheres:

Partial monitoring systems (monitoring spheres)	Guarantor	Centre
Air	MoE SR	Slovak Hydrometeorological Institute
Meteorology and climatology	MoE SR	Slovak Hydrometeorological Institute
Water	MoE SR	Slovak Hydrometeorological Institute
Soil	MoARD SR	National Agricultural and Food Centre – Soil Science and Conservation Research Institute
Geological factors	MoE SR	State Geological Institute of Dionýz Štúr
Biota (fauna, flora)	MoE SR	State Nature Protection
Forests	MoARD SR	National Forest Centre
Waste	MoE SR	Ministry of Environment of the SR
Foreign substances in foods and feeds	MoARD SR	National Agricultural and Food Centre – Food Research Institute
Environmental radioactivity	MoE SR	Slovak Hydrometeorological Institute

MoE SR – Ministry of Environment of the Slovak Republic, MoARD SR - Ministry of Agriculture and Rural Development of the Slovak Republic

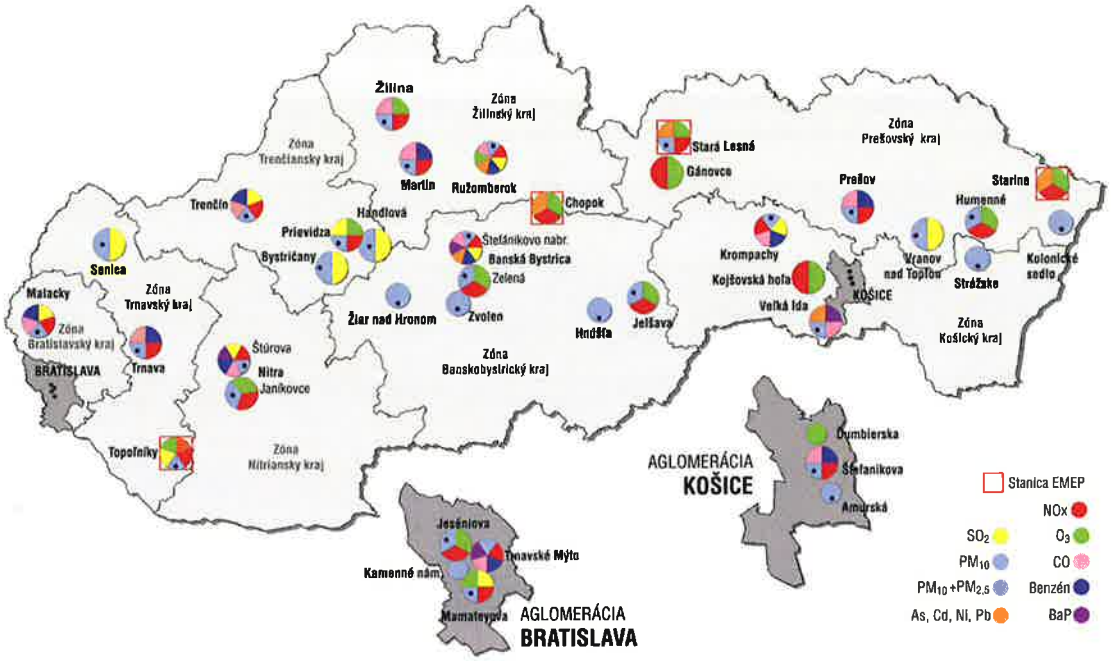
The individual partial monitoring systems were built based on the approved projects. Their task is mainly to specify the content focus of a specific partial monitoring system and define basic approaches and methods of monitoring. The developed projects solve the monitoring system so that the monitored indicators, system, methodologies and monitoring network meet not only internal legislative requirements, but also respect international obligations, in particular in connection with the SR membership in the European structures.

Partial Monitoring System – Air
To monitor local air pollution, 37 automatic monitoring stations were placed in Slovakia in 2015, most of which monitor basic pollutants (SO_2, NO_2, NO_x, PM_{10}, $PM_{2,5}$). In 2012, the automatic measurements of benzene (C_6H_6) were conducted at 10 stations. In parallel, at 5 urban stations and four rural ones, the sampling of PM_{10} with EMEP program was carried out for the heavy metals analysis (Pb, As, Ni, Cd). At 24 urban (suburban) and 3 rural stations the particles with an aerodynamic diameter smaller than 2.5 μm ($PM_{2.5}$) were measured. Benzo(a)pyrene (BaP) was measured at 5 monitoring stations.

In accordance with the requirements of the Act on Air Protection, the territory of the SR was divided into 8 **zones** and 2 **agglomerations**, and within them 12 **areas of the air quality management.**
The area of the air quality management is an agglomeration or defined area of the zone where the following values are exceeded:

- limit value of one substance or more pollutants increased by the limit of tolerance,
- limit value of one substance or more pollutants, if the limit of tolerance is not defined,
- target valut for ozone, $PM_{2.5}$ particles, arsenic, cadmium, nickel or benzo(a)pyrene.

The national monitoring network of the air quality – situation as of December 31, 2016



Partial Monitoring System – Meteorology and climatology

It obtains data on the weather condition and course and on the climatic system condition and development in measuring networks of ground synoptic stations, meteorological radars, stations with the climatologic programme of observing, precipitation measuring stations, stations for measuring solar radiation, including measurement of the total ozone, phenological stations and in the network for measuring soil temperature and soil humidity. It ensures meteorological satellite measuring, measuring at the ground layer of atmosphere and radio probing measuring.

Partial Monitoring System – Water

As part of monitoring, the current condition of water systems from the perspective of their quantity, quality, division within space as well as trends of their development, protection and possibility of usability are monitored. The monitoring includes the following sub-systems:

1. Quantitative indicators of surface water,
2. Quantitative indicators of underground water,
3. Quality of underground water,
4. Quality of surface water,
5. Thermal and mineral water,
6. Irrigation water,
7. Recreation water,

while the sub-systems 1 to 4 are ensured by the Slovak Hydrometeorological Institute; ensuring of activities of the sub-systems 5 and 7 falls under the sector of health care and of the sub-system 6 under the sector of agriculture.

Partial Monitoring System – Soil

It monitors the condition and development of those soil characteristics that are important in terms of fertility and ecological (extra-production) functions of soils. With the same rate of importance, it monitors their contamination by risk substances due to possible entry of these substances into the food chain. The basic monitoring network of Slovakia has 318 localities on agricultural land and land above the upper limit of forests and 111 localities on forest lands. When selecting localities, the ecological principle was taken into account (it includes all main soil types and sub-types, soil-forming substrates, all climatic, polluted areas and relatively clean areas).

Partial Monitoring System – Geological factors
It serves for monitoring and evaluating the mechanism of negative changes in the geological environment. In the following individual sub-systems:

- Landslides and any other slope deformations,
- Tectonic and seismic activities of the territory,
- Anthropogenic sediments of the character of environmental burdens,
- Impact of mining on the environment,
- Monitoring of volume activity of radon in the geological environment,
- Stability of rock massifs under historic buildings,
- Monitoring of river sediments,
- Volume-instable sediments,

It evaluates sensitivity of the geological environment to the activity of geological processes and identifies changes in the environment that can cause in certain cases some serious extraordinary events with extensive economic consequences.

Partial Monitoring System – Biota
It ensures monitoring of threatened species of plants, animals and biotopes, analyzes and explains the condition and changes in populations of selected organisms and biotopes in a selected territory. It includes the following individual sub-systems:

- Fauna: ascertainment of distribution and quantity of all monitored species (33) in selected localities with minimally yearly frequency (distribution, quantity),
- Flora: record-keeping of new and vanished localities of all selected species (17) with yearly frequency (distribution, quantity),
- Biotopes: monitoring in 37 permanent monitoring areas (PMAs) in the following groups of biotopes – wet meadows and high-herb wetland communities, submontane, mountain meadows and pastures, xerotermic and rock communities with the two-year frequencies (type composition).

Partial Monitoring System – Forests
It monitors the individual biotic and abiotic components of the forest ecosystem. In addition to forest woody plants, they are also no-tree phytocenoses, soil, water and air, whereby it obtains information of the forest condition, spatial and time changes, as well as knowledge of relations to stress factors in the regional, national and international scale.

Partial Monitoring System – Waste
It focuses on collection of data of waste origin (the place of origin, the type of waste according to the waste catalogue, the quantity of waste), the method of their handling (the place of handling, activities when handling them) and their disposal (the place of disposal, organisation disposing waste, method of waste disposal).

Partial Monitoring System – Foreign substances in foods and feeds
It obtains objective data of contamination of foods and feedstuffs in their mutual causal link with contamination of the environment within the following sub-systems:

- Coordinated targeted monitoring,
- Monitoring of the consumer basket,
- Monitoring of game animals.

Partial Monitoring System – Environmental radioactivity
It makes information on radioactivity in the environment accessible. The radiation monitoring network of the SR has been created based on requirements of the time to guarantee radiation safety of Slovakia either from the perspective of possible threatening from the territory of the SR or from beyond the border.

4. Presentation towards the public

Publishing SOE reports and their releasing – mainly at public telecommunication networks – is a basic requirement of the first pillar of the Aarhus Convention – i.e. the access of the public to information on the environment. Without meeting this assumption, it is not possible to fulfil additionally requirements of the remaining two pillars of this Convention, i.e. the participation of the public in the decision-making process concerning the environment and the access of the public to justice in matters related to the environment.

- *Information System of Indicators (ISI)*

The SEA has already been regularly for several years collecting, processing, interpreting and evaluating data for selected groups of the environment indicators (sustainable development indicators, environment indicators, key indicators, sector indicators, green growth indicators, and others). Further, such information serves as source materials for processing various evaluation reports, such as the information base of data on the environment, but also as instruments further entering the process of creation or evaluation of environmental policies, their directing, fulfilment of targets at various levels. Based on multi-year experience it can be stated that there is constant interest in environmental information and indicators and that this information product has its real justification.

For simplification of the preparation of the environmental evaluation indicators and for editing the evaluation reports, the Information System of Indicators has been developed at the SEA. Its main task is to unify outputs at the web, modernize and simplify the preparation of source materials for editing of the evaluation reports. Its target is also to concentrate the whole information database in one place, archive data and ensure simpler access to data for all employees.

After logging in the system, the user finds himself in the editing environment where he can insert new chapters and include them hierarchically in the structure of the report; subsequently he can write and change a chapter in an environment similar to the classic text editor. The ISI also has its database part serving as a source material for the creation of graphs and tables. These graphs with the unified pre-set design are used as the basic graphical output at the website.

Thus, all indicators are administered and published in a structured and unified way where each indicator has its firmly defined structure consisting of two parts. The first part is devoted to specification of the indicator (metadata), the other part is focused on the indicator evaluation.

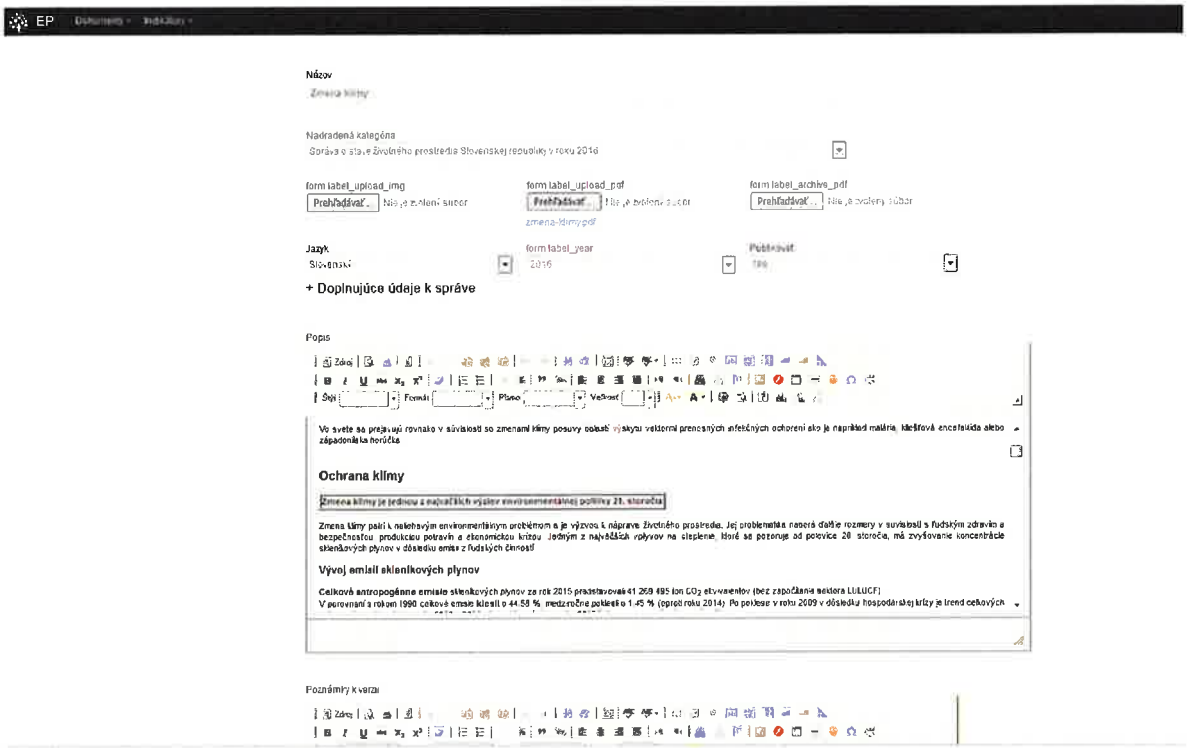
All metadata are to ensure for the users the maximal possible transparency of the indicator origin. Each indicator is based on one or more data resources that are processed according to the methodology specified in the indicator specification. These data are used for drawing up the respective tables, maps and graphs used in the preparation of analyses and evaluations. A new evaluation is prepared immediately as soon as the updated data are available and the updated version of the indicator is published at the website of Enviroportal.

Outputs of the Information System of Indicators

http://www.enviroportal.sk/indicator/101?langversion=sk

http://www.enviroportal.sk/spravy/kat21

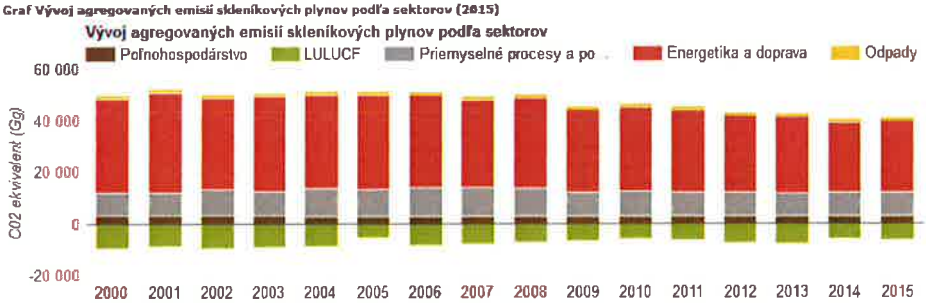
Example of the environment of the Information System of Indicators



Example of the resulting graphs created by means of the Information System of Indicators

Zdroj: SHMÚ
Poznámka: Emisie stanovené k 15. 4. 2017
Zdrojová tabuľka

Údaje



- *Printed version of the report*

The layout of the printed version of the report has been done since 2015 according to the design manual intended specifically for the SOE report. It specifies the colour scale, font type and the format of tables that have to be maintained by the graphical designer in its modifications and making up.

- *English version of the SOE report*

Six editions of the shortened English version of the SOE report have been drawn up so far (2005, 2006, 2007, 2008, 2010, 2012). Its electronic version is only available.

- *www.enviroportal.sk*

Enviroportal is a basic platform for publishing outputs from the information systems, it provides authorized and verified information on the environment in Slovakia and beyond its borders, it serves for its users as the unified access to information provided in the environment sphere. It is also an intersection to information on the environment saved in databases of professional organisations, not only of the Ministry of Environment of the SR. The provided information contributes largely to increasing the environmental awareness of citizens.

- *Other reports concerning the environmental evaluation:*

Sector indicator reports

A specific product of reports on the environment of the SR is the so-called „sector reports" or reports on the rate of implementation of environmental measures in selected sectors of the economic activity. The integration of the environmental policy in the sector policies was initiated at the summit of the Council of Europe in Cardiff in 1998. The Councils of Ministers of the EU were obliged to draw up a set of measures for interconnecting sector and environmental policies and the mechanism for monitoring these processes. Thus, the sector reports have become an instrument of this monitoring.

The first sector reports were drawn up at the SEA in 2005. Since then, the sector reports were evaluated and published regularly every two years. During this period, more changes were made, either process-, content- or presentation-related changes. The last revision of the whole process of evaluating the impact of selected sectors on the environment by the SEA was performed in 2014.

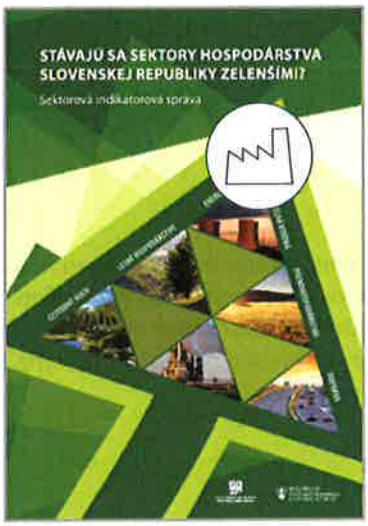
The development in the following six selected sectors of the economy of the SR is evaluated: **industrial production, energy sector, transport, agriculture, forestry, and tourism,** that can be considered to be, with respect of their character, the most important in terms of the impact on the environment and the resource utilization. The evaluations are based on methodologies of international organisations (the Organisation for Economic Co-operation and Development (OECD), the European Environmental Agency (EEA)).

The process of evaluating impacts of selected sectors on the environment is fundamentally implemented by means of evaluating a set of indicators grouped into the individual units according to the following key questions:

- How are the environmental principles and targets implemented that are related to the sector in the strategic documents at the SR and EU levels?
- What is the condition and directing of the sector in relation to the environment?
- What are interactions of the sector and the environment?
- What is the response of the society to mitigating or compensating negative consequences of the sector on the environment?

The last sector report that was drawn up in 2017 is the report called "Are the sectors of the economy of the Slovak Republic becoming greener?". The report presents the assessment of the state of selected sectors of the economy from the perspective of their impact on the environment and the level of utilization of natural resources. It presents the development from the perspective of separating the environmental pressure of the sector from its economic growth. It points out to the sphere requiring a higher attention to the restriction of their negative impact so that the Slovak Republic is able to ensure the meeting of adopted obligations and targets in the sphere of sustainable development, the environment care and the transition to the low-carbon and green economy.

The evaluations in the report are focused on the period of 2000 – 2015. In some cases, the time horizon is different, in particular due to different availability of data. For evaluating the directing of the sector towards the sustainable growth, the decoupling method is used, i.e. separating the impact of the economic growth in the sector from its negative impact on the environment and resource utilization.



The reports are drawn up in the Slovak language; the reports of 2007, 2011, 2013 and the last joint report of 2017 have also been translated into the English language. All reports are published on-line at the website of Enviroportal, while the report of 2017 was also published in the printed form.

Information brochures of the environment

Another possibility how to increase the environmental awareness of citizens of the SR as well as to compare, evaluate trends in the environment is publishing information brochures of the environmental condition and development. Unlike the SOE reports, information brochures provide concentrated information on the environment through the assessment of selected environmental indicators for the individual components of the environment, cumulative (global) environmental problems, for selected sectors of economic activities and the respective instruments of the environmental care. Some other interesting information can be found in the information brochures, such as of the development of main demographic and medical indicators in the SR relevant from the perspective of evaluating pressures or impacts on the environment and health status of citizens. The periodicity or updating of the information brochures of the environment is irregular.

Examples of the published information brochures