MINISTRY OF THE ENVIRONMENT OF THE SLOVAK REPUBLIC

STATE OF THE ENVIRONMENT REPORT

SLOVAK REPUBLIC 2005

FOREWORD

Suitable living conditions represent one of the basic conditions for human existence on the planet Earth. The ever increasing public pressure to exploit natural resources as well as to increase environmental quality calls for an adequate reaction in the form of environmental protection that would eliminate loads from the past, maintain existing values, and minimize potential negative impacts in the future. Human life is what we consider the greatest value.

Development of **environmental care and protection** builds on the rights and responsibilities set forth by the Constitution of the Slovak Republic, obligations of the Slovak Republic within international conventions, and the country's membership in international organizations, specifically the European Union. Accession of Slovakia to the European Union made it possible to adapt to our legal system a number of **legal provisions in the area of environment.** We have carried out the implementation proccess, applying these provisions at our regional level, sometimes struggling with local challenges in some cases. New legislation has been enforced, including, for example, the law on integrated pollution prevention and control, on the system of major industrial accidents prevention, on environmental managerial systems and audit, on the process of environmental impact assessment of strategic documents, etc. These documents also contribute to the improvement of environmental quality – as there has been an improvement to air, water, and soil conditions. Notwithstanding a number of undesirable intentions and trends, we have made a progress in the area of nature and landscape protection, waste management, nuclear safety, flood protection, and other areas. We call to our witness a number of facts and data found in the document you are holding in your hands - **State of the Environment Report in the Slovak Republic in 2005.**

In 2005, there was a longer-term trend in reducing total volumes of produced emissions of air pollutants, which resulted in **improved air quality.** However, there still exists an adverse situation caused by exceeded limit values for suspended particles. This problem is also known in other EU countries.

The situation in **wastewater balance** has taken on a positive trend. It relates especially to the reduction in total volume of discharged wastewater. We are still far from being satisfied, although there has been a slight increase in the number of inhabitants connected to the public sewerage system, as well as a slight increase in the length of the sewerage network. We believe that construction of this **basic environmental infrastructure** must therefore become one of the priorities of the national environmental strategy.

Overall **production of waste** has been uniform over the recent years. There was a slight reduction in the volume of produced municipal waste, compared to the previous time period. Waste reclamation has also experienced a positive trend, both in the increased proportion of reclaimed waste, as well as in the increased number of capacities built for this purpose. Development of the recycling industry is greatly beneficial as well.

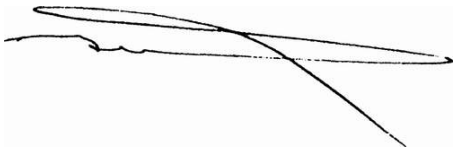
The long-term reduction in air pollution resulted in a stabilized **health condition of our forests,** with improved average defoliation in most tree species.

Notwithstanding a number of improvements to the environmental situation in Slovakia as mentioned in this **State of the Environment Report in the Slovak Republic in 2005,** we still face a number of challenges. One of the reasons for this is that not in all regions and municipalities, and across all the components of environment, does the quality of environment reach the level determined by pertinent legislation. There are weak points, especially in the area of the environmental infrastructure construction, with a number of transitional periods and exceptions set by the European Union. To reach a full harmonization of the infrastructure with the European standard is going to be much demanding and financially consuming.

The Slovak government in its strategic program statement set out priorities for the area of environmental care and protection for the following time period. The program considers environmental care and protection to be a decisive instrument in securing sustainable development, based on the integration of three equal pillars - economic, social, and environmental, in line with the European environmental legislation. Domestic financial sources including the Environmental fund and the business Recycling Fund, as well as international sources, should serve to define priorities and solve identified problems. We expect a substantial assistance from the European Union funds. Currently, we are creating an important document - **Environment Operation program,** which builds on the **National strategic reference framework of the Slovak Republic for the years 2007-2013.** This operation program builds on the analysis of environmental situation, on obligations of the Slovak Republic within the Integrated approximation strategy under the chapter of Environment, agreed transitional periods, as well as on tasks resulting from the newly adopted European environmental legislation. At the same time, it sets out high-priority sectoral goals for the European Union funds, streaming into environmental care and protection. We will try to advocate such market mechanisms and other economic instruments that would become an impulse for the **development of small and medium business activities in environmental area,** and meanwhile will try to consistently implement the „ polluter pays" principle.

The Slovak government will also make efforts to **raise public environmental awareness. Periodic information campaigns on environmental situation** will also contribute to this goal. It helps to create an objective opinion poll and a good background for decision-making that will lead to improved environment, sustainable development, better control and assessment of sectoral strategies, as well as reaching a **higher level of environmental safety and adequacy** in Slovakia. In the past, we neglected this fundamental condition for quality of human life with its demands on man's immediate environment. For this reason the Slovak government in its strategic position statement also puts emphasis on **cultivating the environment and beautifying towns and villages.** Objective of the government is for each citizen to have conditions conducive to a life in a safe and suitable environment. This will require considerable costs to eliminate old environmental loads and causes of excessive pollution, deterioration, and damage to the environment in a number of impacted areas and municipalities. In other areas it will be necessary to maintain the existing or improved environmental quality and eliminate effects of any detrimental activity.

This **State of the Environment Report in the Slovak Republic in 2005** represents an effective way of spreading environmental information pursuant to Act no. 17/1992 Coll. on environment, as amended. The Report also includes comparisons with other European Union countries, together with development trends. I hope that this Report becomes your valuable source of information and will help you not only in your professional life, or satisfy your desire to know more objective facts about the environment we live in, but will also become an inspirational reservoir of ideas in your quest for a better environment in the Slovak Republic.



Ing. arch. Jaroslav Izák

Minister of the Environment of the Slovak Republic

*Everybody has the right to get prompt and thorough **information on the condition of the environment** and on the reasons and consequences of this condition.*

Article 45 of the Constitution of the Slovak Republic

ENVIRONMENTAL MONITORING AND INFORMATION TECHNOLOGY

• LEGAL OUTCOMES AND CONCEPTS

Environmental monitoring and information technology are built pursuant to Act number 261/1995 Coll. on State information technology system, Concept of the information system of the ministry, and in the year 2000 on the resolution of the Slovak government number 7/2000 on approved concepts of completion of the complex environmental monitoring information system. The goal is to ensure and make available environmental information on the state of environment and involve the public in decision-making processes. This is in line with Act No. 205/2004 Coll. on gathering, maintaining and disseminating information on environment.

• ENVIRONMENTAL MONITORING SYSTEM

The System of environmental monitoring is an indispensable tool to know the environment and ensure environmental care. The System contains partial monitoring systems (PMS) installed at selected centres. The Information monitoring system (IMS, www.ism.sk) with the goal to create a homogeneous, interconnected information unit consistingof partial IMSs. The unit is able to provide most objective report on the actual state of components of environment and due to interconnected databases is generally accessible through the Internet.

PMS	Guarantor	Centre	Monitored subsystem	
Air quality	MoE SR	Slovak Hydro Meteorological Institute	Level of pollution Ground atmospheric level – air above the whole Slovak territory is divided into 2 agglomerations and 8 zones.	
Meteorology and climatology	MoE SR	Slovak Hydro Meteorological Institute	Network of ground synoptic and air stations Network of meteorological radars Meteorological satellite measurements Network of stations with climatology observation programme Network of precipitation measuring stations Network of stations measuring solar radiation and total atmospheric ozone	Network of phenological stations Network of measuring soil temperature and soil humidity Network of measuring in the ground atmospheric level Aerologic station Storm detection station network
Water	MoE SR	Slovak Hydro Meteorological Institute	Surface water quantitative indicators Groundwater quantitative indicators Surface water quality Groundwater quality	Thermal and mineral water Irrigation water Recreational water bodies
Radioactivity	MoE SR	Slovak Hydro Meteorological Institute	Environmental radioactivity - Ground atmospheric level at monitoring sites	
Waste	MoE SR	Slovak Environment Agency Banská Bystrica	Waste generation and disposal in Slovak Republic Waste reclamation facilities	Waste reclamation facilities Interstate transport of hazardous waste
Biota	MoE SR	State Nature Protection Banská Bystrica	Fauna Flora	
Geological factors	MoE SR	State Geological Institute of Dionýz Štúr in Bratislava	Landslides and other slope deformities Erosion processes Monitoring of erosion processes Soils of unstable volume Effect of mineral exploitation on environment Change to anthropogenic sediments Stability of rock massifs below historic objects	Anthropogenic sediments burried Tectonic seismic activity of territory Monitoring of snowcap chemical composition Monitoring of seismic phenomena Active alluvial sediments Volume activity of Radon in geological layers
Soil	MoA SR	Soil Science and Conservation Research Institute in Bratislava	Basic network Key locations Special network of sites	Spatial monitoring of agricultural lands Forest land monitoring
Forests	MoA SR	National Forest Centre in Zvolen	Extensive periodical monitoring - 112 permanent monitoring areas Intensive periodical and continuous monitoring – 7 permanent monitoring areas	
Xenobiotic substances	MoA SR	Research Institute of Food in Bratislava	Coordinated focal monitoring Consumption pool monitoring	Monitoring of game and fish

Source: MoE SR

Financial resources spent on environmental monitoring (thous. SKK)

PMS	Year			
	2002	2003	2004	2005
Air quality	28 651	27 600	18 400	16 900
Meteorology and climatology	28 300	33 200	35 000	26 031
Water	44 434	35 330	24 192	43 717
Radioactivity	2 668	1 792	1 454	1 500
Waste	3 500	3 500	3 500	3 800
Biota	600	169	600	1 000
Geological factors	10 000	10 000	10 000	10 000
Soil	9 200	9 200	9 200	9 600
Forests	1 720	2 900	2 900	4 400
Xenobiotic substances	27 032	28 400	27 381	12 454
Total costs	**156 105**	**152 091**	**132 627**	**129 402**
Costs of MoE SR	118 153	111 591	93 146	102 948

Source: MoE SR

• ENVIRONMENTAL INFORMATION SYSTEM

Environmental information system integrates information from environmental monitoring, information from environmental assessment, and spatial information on territory. Other generated information support activities of environment authorities and subjects that enforce legislation within the Slovak environmental law. These include mainly the Ministry of Environment of the Slovak Republic (MoE SR) and its affiliated organisations, as well as other institutions under different ministries. MoE SR and its daughter organisations maintain other databases, information systems, and internet and intranet portals to support their activities and present their outcomes.

Information on the organisational structure and responsibilities may be found in the Catalogue of the Environmental Data Sources of Metainformation System and the upcoming Special Public Information List.

Enviroportal is the gateway to all the mentioned environmental information (www.enviroportal.sk) that gathers data sources through the Ministry's local computer network.

Overview of the major information systems and databases created and maintained at the Ministry of Environment, that contain environmental information

Name of Information System	Operator	Description of IS	In operation since*
Information Environmental System (IES)	SEA	Draws information from the following systems, subsystems, and databases.	
Enviroportal	SEA	Gateway to environmental information with up-to-date reports including information on amendment procedures, together with discussion forums, and information on environment-related events - www.enviroportal.sk.	2005
Meta-information on Environment	SEA	Summary information on organisation and competencies within the Ministry of Environment.	new version since 2005
GEMET database	SEA	Multi-lingual lexicon of environmental terminology	
Environmental videography	SEA	Online catalogue of films and video programmes related to environment.	2005
Information monitoring system (ISM)	SEA	Integrates information from ten partial monitoring subsystems. See the overview above.	1999, new version since 2005
Information system on territory (IST)	SEA	Ensures spatial data needed for decision making within the territory and for spatial interpretation of database-retrieved data. IST provides for report, processing, and publishing of spatial data on environment, both within the Ministry of Environment SR, as well as in public. Strong emphasis is placed on harmonisation with activities on the national, as well as international level, and respecting the upcoming EU Resolution for INSPIRE.	2004
Information system on the state of environment (ISS)		ISS consists of information files, both in text and table formats, that describe the state of environment over a recent time period. The information is categorised by environment components, indicators, and years. Some information is assessed in relation to impacts of economic activities.	
Information system of environment departments and offices (IS EDO)	SEA	IS EDO gradually ensures information support for public administration activities in the area of environmental creation and protection. Therefore, it consists of subsystems defined as duties of the state administration for the area of environment under Act No. 525/2003 Coll. on state administration of environmental protection.	2004
Information system of the environmental impact assessment	SEA	IS on the state, process, and outcomes of environmental impact assessment. Ensures information flow among participants to the EIA process (proponent, pertinent authority, permitting authority, impacted authority, impacted municipality, public, and qualified persons). The System has the form of a web application through which the impacted authorities connect onto the central database. After authorisation and verification steps, they may input their own data as well as retrieve information.	Impact assessment of strategic documents
IS of integrated pollution prevention	SEA	After its completion, the system will provide information on the state, process, and outcomes of the IPPC permit process, as well as closely-related activities, including the best available technologies. Created	first part since 2005

and control (IPPC)		information system will also ensure information support for state administration activities. Meanwhile, a mechanism of gathering, processing and releasing information to the public will be created.	
Information system of major industrial accidents	SEA	Makes available documents relating to the whole process of major industrial accidents prevention, including preparation of their reports for JRC.	2004
Regional Waste Information System	SEA	Provides for system of gathering data on waste management activities, registers of waste generators and keepers, data on waste generation and disposal, as well as records of operators and waste reclamation and elimination facilities, records of landfills, and records of hazardous substances transport.	2002
IS POVAPSYS	SHMI	IS should help through: 1. Increasing the prior forecast and warning time, which will create conditions for better protection of property and lives against floods,2. Ensure more exact and more reliable forecasts and warnings,3. Ensure a greater number of forecasts for specific time periods and for more locations,4. Provide outcomes and data available through the Internet or directly by the user. 5. Interconnect information with Hungary, Ukraine, Poland, Czech Republic, Austria, and Germany.	first part since 2005
Hydrological Information System	SHMI	Includes Slovak hydrological data by different modes of operation - long-term information on individual network of stations (catalogues), and detected or otherwise acquired hydrological data (registers).	
Climatology and Meteorology Information System	SHMI	Addresses operational and research activities of all climatology and some meteorology fields.	
Complex Water Register	SHMI	Contains selected information and data on the state of surface and ground water, information on the volume and quality of water formations, data on surface water extraction, on the volume of discharged water, on produced and discharged waste water contamination, acquired from water users through their mandatory notification to SHMI.	
Databases of single sources of water contamination	SHMI	Keeps information on location and character of potential sources of contamination of surface and groudwater.	
National Emission Inventory System	SHMI	Includes information on operators, emissions, and technologies of large and medium-size air pollution sources.	
State Register of Protected Areas	SMNPaS, SNC SR	Includes data on graphical layers and databases from the area of spatial and individual protection of flora and fauna, and biotopes of European and national significance (State Register of Protected Areas, SSPA and LSPA, Protected Trees Catalogue, Natura2000SK) and their updates, catalogue of increments of Protected Areas (PA) and Protected Zones (PZ), Catalogue on PA and PZ.	gradually since 2002
Databases	SMNPaS	Protected Bird Territories database (since 2004), Cave Database of Slovak Republic (since 2003), Journal Database System BACH.	
Information system of taxons and biotopes and other nature	SNC SR	Database of taxons and biotopes (since 2002), Database of Waterfalls (since 2004), database of bear monitoring (since 2003), CITES database (since 2004), Database of barrier components in landscape, Database of introduced and invasive taxons of plants and animals, Database of Europe's significant taxons of	

protection databases		animals and plants.	
International taxonomic information system and other databases	ZOO Bojnice	International Species Information System Database - international inventory system of animals raised in ZOO, Yearbook of the Union of Czech and Slovak ZOOs.	
Databases	WRI	Water management plans of watersheds (surface and groundwater sources, water demand and regional water management strategies), Water management balance (data on balance assessment profiles, flows and impacts on water utilisation), Hydro-energy potential of watercourses (water bodies constructed, under construction, and planned, large and small aquatic power plants) Database of watercourses, Database of yields and extractions from water sources, Information Water Supplies and Sewerage Systems administered by water management companies and municipal offices, Geographical Information System on drinking water supply and sewerage system installation in Slovak villages in connection to Water Supply and Sewerage Database, Data on Water Management Construction funded from investments, and on operations in Slovakia, Drinking Water Quality Indicators Database, Database of production and qualitative composition of sludge from municipal wastewater treatment plants, its use and elimination, Database of water contamination dealing with organisations, technologies, substances, and their elimination, Database of technological and operation data of wastewater treatment plants, Database of technological and operation data of water treatment plants, Database of surface and groundwater sources, large and small water dams and water management protection zones.	
Databases and GIS layers	SCA	DSPELEO National database of cave, Hydrological, climatic and bio-speleological monitoring, Geographical Information System of Cave Protection.	
Databases	SMM	BACH and AMIS Collection Database Systems.	
Databases	SEI	Databases from the activities of the inspection for waste, water, air, nature protection, and IPPC.	
Databases and registers	SGIoDS	Register of bores (since 2000) and HG wells, abandoned mining sites, slides, Register of mapping (since 2002), Register of geological mapping (since 2002), Register of geo-physical mapping, Register of geo-chemical mapping, Register of surveillance and perspective surveillance areas, Landfill Register, Register of Exclusive Deposits (since 2002), Register of Physical Documents (since 2000), Register of old environmental loads on the rocks, Register of Digitalized Geological Maps, Digitalized Geological Map of the Slovak Republic (since 2006).	
Register of basic residential units	SEA	Register of basic residential units is the basic numeric reference for the IES components. It provides for spatial identification of information.	

Source: MoE SR

* missing information *In operation since:* means that the operation began before 2002.

Environment *is everything that creates natural conditions for existence of organisms, including the humans, and is a condition of their further development. Environment is created* ***by its parts,*** *first of all air, water, rocks, soil and living organisms.*

§2 of Act No 17/1992 Coll. on Natural Environment as amended

COMPONENTS OF THE ENVIRONMENT AND THEIR PROTECTION

• AIR

Emission situation

♦ **History of particulate matter emissions and sulfur dioxide emissions**

Records show a steady reduction in **particulate matter emissions (PM)** since 1990. Decreasing trend in SO_2 emissions since 1996 was caused by reduction in brown coal, lignite, and heavy heating oil consumption, use of low-sulfur heating oils, and installing de-sulfurization equipment at large energy sources. Slight fluctuation in the SO_2 emissions in 2001 and 2003 was caused by their partial or complete operation, quality of used fuels, and volume of production. SO_2 emissions decreased in 2004 as a consequence of increasing burning of low-sulfur heating oils. Slight increase in particulate matter was caused by increased consumption of wood by small sources (households).

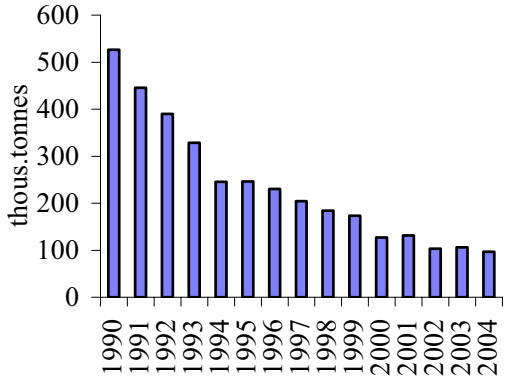
♦ **Trend in emissions of nitrogen oxides**

Nitrogen emissions (NO_x) showed a slight reduction in 1990 - 2004. This trend was partly interrupted in 1995, when a slight increase occurred, due to increased consumption of natural gas. Another reduction in nitrogen oxides emissions was recorded in 1996, as the result of a change to the emission factor that reflects the existing situation in incineration equipment and technologies. Reducing the consumption of solid fuels led to a further decrease in NO_x emissions since 1997. In 2002 - 2003, emissions were significantly reduced due to de-nitrification at large energy sources. Since 2004, the trend in emissions has seen no major changes.

♦ **Trend in carbon monoxide emissions**

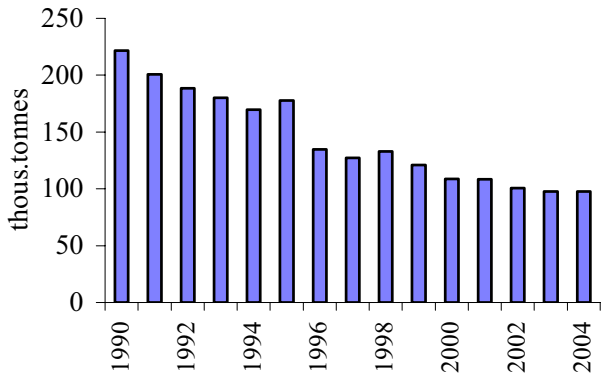
Carbon monoxide emissions (CO) since 1990 have shown a falling tendency, which was caused mainly by reduced consumption and change in fuel composition in the sphere of retail consumers. Trend in reduced CO emissions from large sources was not significant. Iron and steel-producing and processing industry has been the major contributor to total emissions. Reduction in CO emissions in 1992 was caused by decreased volume of production in this type of industry. In 1993, after the mentioned production reached the level of 1989, CO emissions increased correspondingly. In 1996, there was again a slight reduction in carbon oxides emissions, as a consequence of CO emissions reduction measures in the most significant production area (iron and steel production). Fluctuating trend in emissions in 1997 - 2003 relates to the volume of produced iron, together with fuel consumption. Although in 2004 CO emissions increased, especially at large sources, they dropped in the area of road transport. Reduction of emissions in the area of road transport relates to decreased consumption of petrol types, as well as to an on-going renewal of vehicles, and introduction of those with three-way operated catalyzer.

Trend in emission of SO_2



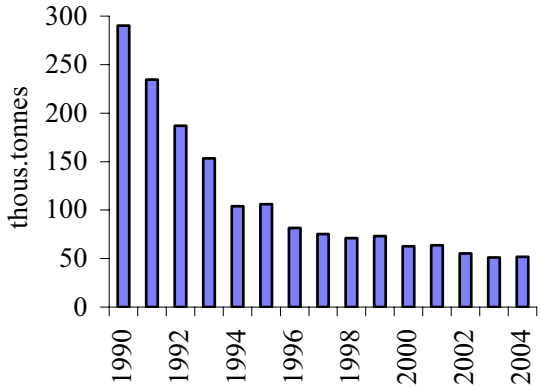
Source: SHMI

Trend in emission of NO_x



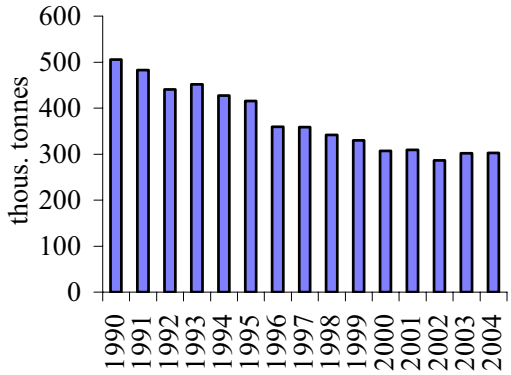
Source: SHMI

Trend in emission of PM



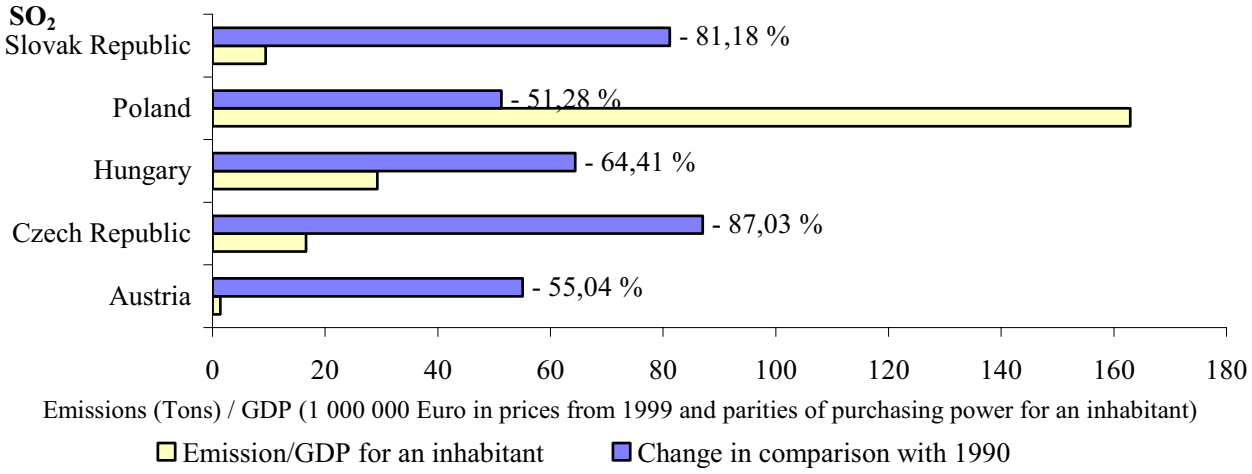
Source: SHMI

Trend in emission of CO

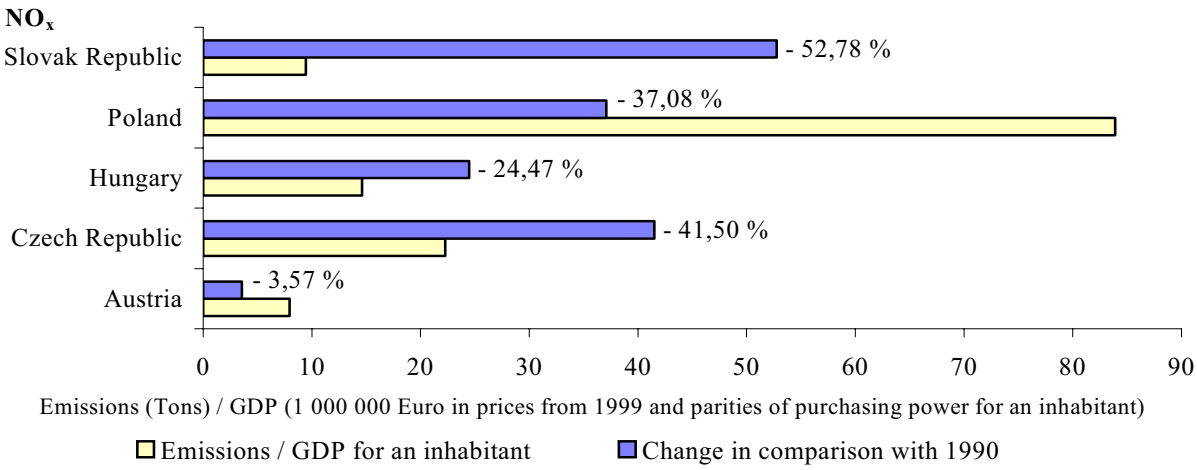


Source: SHMI

Comparison of the emission of basic polluting substances in 2002 (Tones/GDP on 1 inhabitant) in the selected states



Source: Eurostat



Source: Eurostat

- **Ammonia emissions (NH_3)**

NH_3 emissions in 2004 reached 26 474 tons. In 1990 – 2004 ammonia emissions were reduced by 59 %. This reduction was caused mainly by changes in agriculture. Numbers of livestock was reduced, which in turn contributed to decreased production of animal waste. Organic and industrial fertilizer volumes on agricultural land were also reduced.

The contribution of the particular sectors in NH_3 emission

Emissions were stated to the date 15.02.2006.

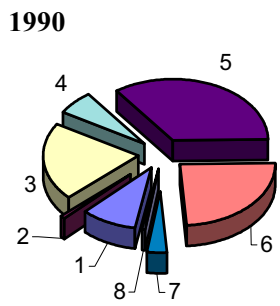
Source: SHMI

♦ **Emissions of non-methane volatile organic compounds**

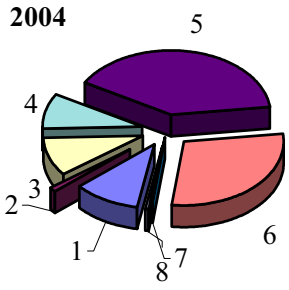
Non-methane volatile organic compounds (NM VOC) *are all organic compounds of anthropogenic nature other than methane, which through reaction with nitrogen oxides and in the presence of sunlight are able to produce photochemical oxidants.*

NM VOC emissions show a lasting decreasing trend since 1990. Drop in total NM VOC emissions was caused by a number of measures, such as reduction in using coating compounds and by gradual introduction of low-solvent types of coatings, extensive introduction of measures in the sector of crude oil processing and fuel distribution, introduction of gas technologies into incineration, especially in the energy area, and by the change to the portfolio of automobiles toward vehicles equipped with the operated catalyzer.

The contribution of the NM VOC emission according to sector of their origin



9.4 %	1. Combustion processes	10.8 %
0.8 %	2. Combustion processes in the industry	1.3 %
20.5 %	3. Industrial technologies	9.6 %
6.4 %	4. Mining and distribution of raw materials	9.1 %
34.8 %	5. Using the solvents and other products	39.6 %
24.3 %	6. Transport	29.0 %
3.3 %	7. Waste disposal	0.2 %
0.5 %	8. Agriculture	0.5 %

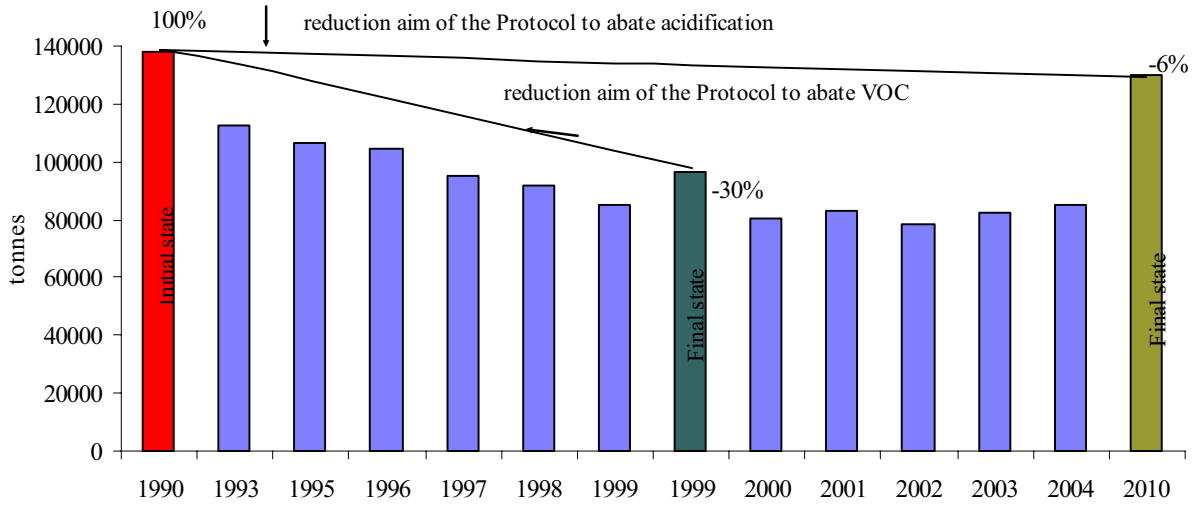


Source: SHMI

Emissions were stated to the date 15.02.2006.

In 1999, the Slovak Republic signed the Protocol on the Reduction of Acidification, Eutrophication and Ground Ozone, and bound itself to reduce the volume of NM VOC by 6 % by 2010, compared to emissions from 1990. This plan has been followed so far.

Trend in NM VOC emissions with regard to fulfilling of the international agreements (tons)



Source: SHMI

- **Balance of heavy metals emissions**

Heavy metals *are metallic, or in some cases partly-metallic, elements and their compounds that are stable and have density higher than 4.5 g/cm^3.*

Heavy metal emissions (Pb, As, Cd, Cr, Cu, Hg, Ni, Se, Zn, Sn, Mn) have been decreasing since 1990. In that year, heavy metal emissions were at the volume of 886.6 tons, while in 2004 it was 290.03 tons, which is a 67 % reduction in comparison to 1990. Besides shutting off a number of old-fashioned and non-effective technologies, this trend has been influenced by extensive reconstructions of the separation equipment, change in raw material used, and, most of all, by transition to using unleaded petrol types.

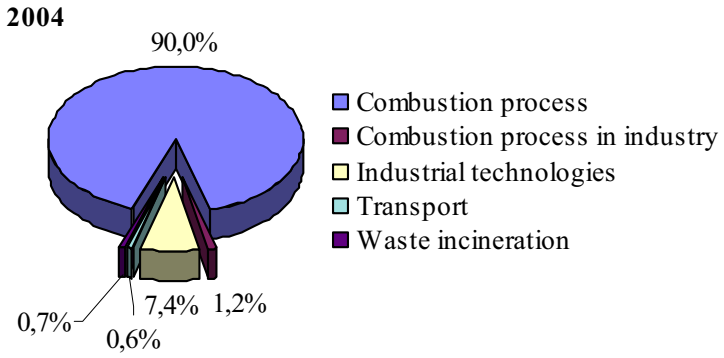
Heavy metals in the air do not represent an environmental issue of only one country. In 1998, the **Protocol on heavy metals** was drafted in Aarhus. This document **followed the UN EEC Convention on Long - Range Trans-boundary Air Pollution,** whose only objective is the decrease heavy metal emissions (Pb, Cd, Hg) to the level of 1990. The Slovak Republic signed this Protocol in that same year. This goal is still being followed.

- **Persistent organic pollutants (POPs)**

POPs *are organic compounds with varying degree of resistance to photolytic, biological, and chemical degradation. A number of POPs are halogenated and characteristic for low water solubility and high solubility in lipids. This results in their bioaccumulation in fat-containing carriers. Since they are also semi-volatile, before their deposition they are transferred in the atmosphere over long distances (long-range transfer).*

In 1990 – 2004 **emissions of persistent organic particles** (PCDD/PCDF, PCB, and PAH {B(a)P, B(k)F, B(b)F, I(1,2,3-cd)P}) had a decreasing trend with fluctuating characteristics over the last years. They were most apparent in the emissions of poly-aromatic carbohydrates (PAH). Trend in reduction of emission volumes was caused mostly by changed aluminum production technology (using of prior-burned anodes), installation of thermal destruction in Elektrokarbon Inc. Topoľčany, as well as by a change to the wood-impregnation technology.

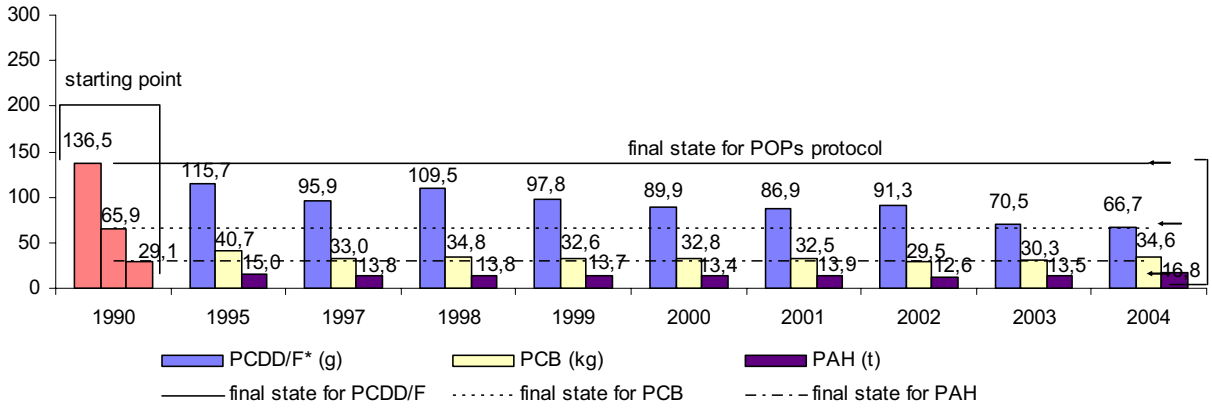
The contribution of the particular sectors in the PAH emission production for year 2004



Emission as they were stated to 15.2.2006 Source: SHMI

In 1998, the Slovak Republic also accessed to **Protocol on Limitation of Persistent Organic Compounds (POP) Emissions under the mentioned Convention**, whose objective was to reduce POP emissions to the emission level of the year 1990, compared to the reference year of 1990. The Slovak Republic signed the Protocol in the same year. This goal is still being followed.

The trend of POPs emissions regarding the fulfillment of the international convention



** Expressed like I-TEQ; I-TEQ is calculated from the values for 2,3,7,8 – substituted congeners PCDD and PCDF using I-TEF according NATO/CCMS (1988)*

Source: SHMI

Air pollution

♦ Air quality and its limits

MoE SR Resolution No. 705/2002 Coll. on air quality that executes Act No. 478/2002 Coll. on air quality, which amends Act No. 401/1998 Coll. on fees for air pollution as amended. This Resolution is fully harmonized with the EU legal regulations in the area of air quality assessment and management.

In 2005, the **national air assessment quality monitoring network consisted of 28 automated monitoring stations (AMS) including 5 stations to monitor regional air pollution and precipitation water chemical composition**. In 2005, automated benzene measurements were carried out at 4 stations, while at 11 stations benzene was measured through passive, 14-day extractions. Besides basic pollutants monitoring, hydrogen sulfide pollution was monitored at one station. Heavy metals analyses (Pb, As, Ni, Cd) were concurrently carried out at 20 extraction sites. In accordance with legal provisions, the Slovak territory has been divided into eight zones and two agglomerations. Boundaries of the zones correspond with regional boundaries, while certain territorial units selected from the Bratislava and Košice regions are considered as agglomerations. Stations that monitor regional air pollution are part of the EMEP – Co-operative Program for the Monitoring and Evaluation of the Long-range Transmission of Air Pollutants in Europe.

♦ Local air pollution

Assessment of local air pollution focuses on air quality in residential areas, and belongs to critical indicators of the quality of environment.

Sulfur dioxide

In 2005, no agglomeration showed exceeded levels of pollution in hourly or daily values beyond the public health limit.

Nitrogen dioxide

Limit value in 2005 for the human health protection for the averaging period of one calendar year was not exceeded at any monitoring station.

PM_{10}

PM_{10} are particles with diameter less than 10 μm and form the fine fraction of the overall dust concentration. In 2005, PM_{10} particles were monitored at 28 stations. At the same time, the $PM_{2.5}$ measurements were carried out at 3 stations, with no limits set for this fraction up to this day. To

calculate the concentrations obtained by automated monitoring, it is recommended to use the factor 1.3 to make the conversion. This factor has been used at all monitoring stations. During the year 2005, PM_{10} measurements were installed at all the stations, using the FMDS model with the assumption that measurements will be equivalent with the reference method. Comparison measurements in 2006 will determine new correction factors, based on the type of devise and site. In 2005, the 24-hour limit for this pollutant was exceeded at all AMS, except the Bratislava-Jeséniova station. 10 stations showed exceeded yearly limit value.

Carbon monoxide

Carbon monoxide pollution level is relatively low and does not pose a major risk in Slovakia. In 2005, its 2005 limit value was not exceeded at any zone or agglomeration in Slovakia.

Lead

At present, air pollution by lead does not pose a major risk in Slovakia. Its concentrations do not exceed the upper threshold evaluation limit.

Benzene

One site (in the Nitra region's zone) shows the pollution level slightly above the limit value of 5 $\mu g.m^{-3}$ (in Nitra it was 5.2 $\mu g.m^{-3}$), to be reached by Slovakia in 2010.

- **Regional air pollution**

Sulfur dioxide, sulfates

In 2005, regional level of **sulfur dioxide concentrations** varied within the interval of 0.43 µg $S.m^{-3}$ (Chopok) to 1.74 µg $S.m^{-3}$ (Liesek). Compared to previous years, values for sulfur dioxide at most stations are lower; differences are negligible at Chopok, Liesek, and Stará Lesná. The upper limit of the concentration interval represents less than 20 % of the critical sulfur dioxide limit (critical limit for the forest and natural vegetation is 10 µg $S.m^{-3}$). In line with Annex 1 of the MoE SR Resolution No. 75/2002 Coll. the limit value for the protection of ecosystems is 20 µg $S0_2.m^{-3}$ for the calendar year and the winter season. This value did not even reach one fifth for the calendar year at any station while only at one station (Liesek) was the maximum value for the winter season from all the stations lower that one third of the mentioned limit. Compared to 2004, **sulfate concentrations in atmospheric aerosol** in 2005 were lower only at Stará Lesná, identical at Starina, slightly higher at Chopok, Liesek, and Topoľníky. Percentage of sulfates on total mass

of atmospheric ozone was 15-24 %. Sulfates and sulfur dioxide concentration ratios expressed in sulfur is shown in the interval of 0.7-1.3, which corresponds to the regional pollution level.

Nitrogen oxides, nitrates

Concentration of nitrogen oxides at regional stations expressed in NO_2-N varied in 2005 between 0.69–2.64 µg $N.m^{-3}$, with the least average annual value at Chopok – 0.69 µg $N.m^{-3}$, higher at Starina – 1.06 µg$N.m^{-3}$, at Stará Lesná – 1.64 µg $N.m^{-3}$, at Liesek – 1.84 µg $N.m^{-3}$, and 2.82 µg $N.m^{-3}$ at a lowland station in Topoľníky. In line with Annex 1 of the MoE SR Resolution No. 705/2002 Coll. the **limit value for the protection of ecosystems is 30 µg $N.m^{-3}$** for the calendar year. This value was not exceeded at any regional station. Maximum value of 8.7 µg NO_x-$NO_2.m^{-3}$ from all stations at Topoľníky is at the level lower than 30 % of the limit value.

Atmospheric **nitrates** at regional stations in Slovakia were mostly in the aerosol form, and at almost all the stations they showed values little increased than in 2004, except for Chopok, which showed more increase. Gaseous nitrates are in comparison with the aerosol ones lower at all stations and, compared to the previous year, differences were negligible. Despite the fact that gaseous and particulate nitrates are trapped and monitored separately, their sum is expressed in line with EMEP, since their phase distribution depends on atmospheric temperature and humidity. Percentage share of nitrates on atmospheric aerosol varied between 9 % and 22 %. Ratio of total nitrates (HNO_3 + NO_3) to NO_2, as expressed in nitrogen, varied between 0.2 – 0.4.

Particulate matter, heavy metals in atmospheric aerosol

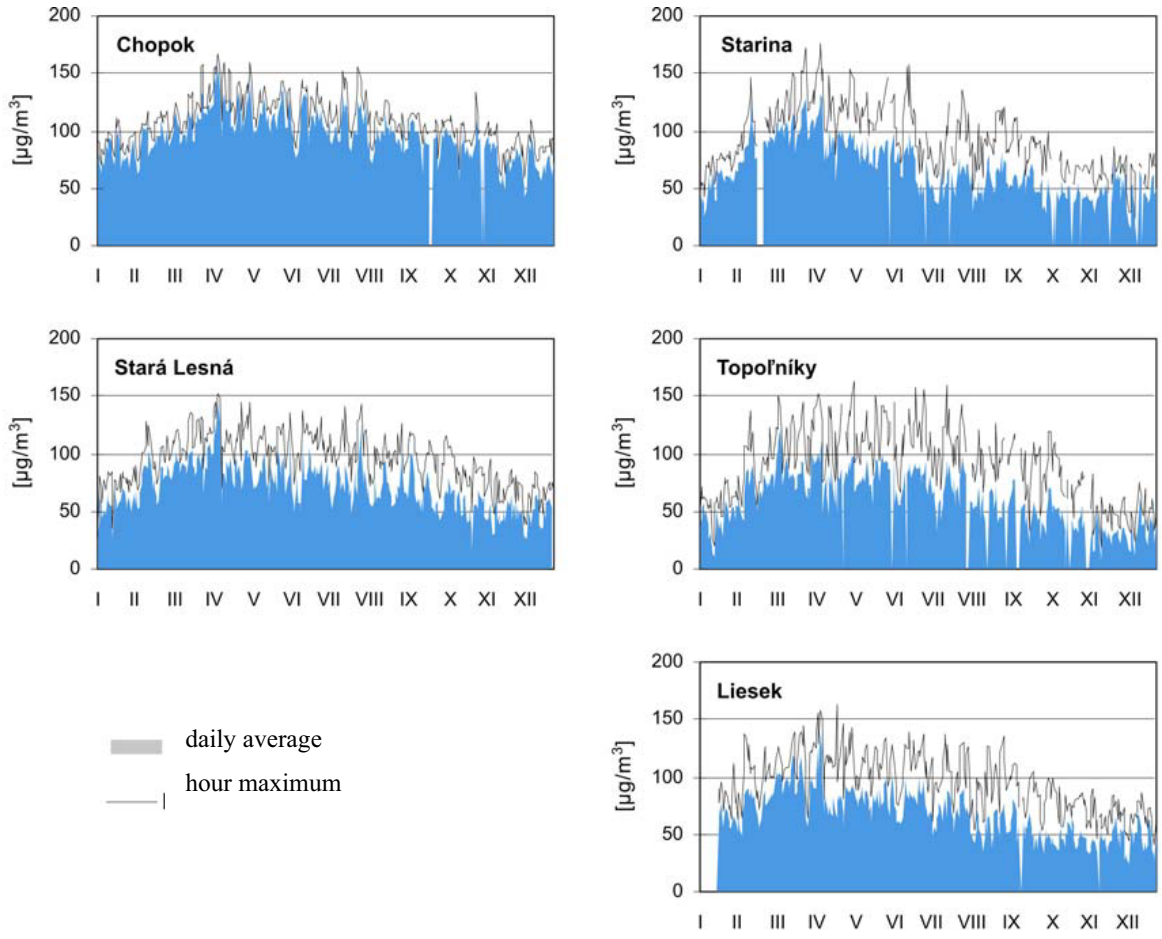
Atmospheric aerosol concentrations in 2005 varied between 6.0 – 22.3 µg.m^{-3}. Compared to 2004, the PM concentration (TSP – total suspended particulate and PM_{10} – particulate matter) in 2005 at most regional Slovak stations was higher, specifically at Stará Lesná, Starina, and Liesek. At Liesek the increase was almost 20 %. On the contrary, a slight reduction in concentrations was shown at Topoľníky, while a significant decrease of almost 25 % was measured at Chopok.

In case of **individual metals concentrations**, compared to 2004, measured lead and manganese concentrations at Chopok in 2005 remained unchanged. Cadmium, zinc, and nickel concentrations were slightly lower, while chrome, copper, and arsenic concentrations increased. In Topoľníky, concentrations of all measured metals remained at similar concentration levels to the previous year, while the concentrations of cadmium, zinc, chrome, manganese, copper, and arsenic increased. Nickel concentrations slightly dropped. At Starina in 2005, the measured lead, cadmium, and zinc values were lower than in 2004, while chrome, manganese, and arsenic concentrations showed a slight increase. At Stará Lesná, concentrations of lead, zinc, nickel, and chromium were at lower concentration levels than in 2004; however, concentrations of manganese and copper were higher. At Liesek, manganese and

arsenic showed lower values. Lead, chromium, and copper at Liesek were higher in 2005 than in 2004, while cadmium and nickel remained almost unchanged. Among the evaluated trends, lead shows the most significant reduction, which relates to gradual decrease of the lead content in fuels since 1982 as well as to their present lead-free production. Percentage share of the sum of assessed heavy metals on air-borne dust at regional stations of Slovakia varies between 0.19 and 0.30 %.

Ozone

During the years 1970 - 1990 was recorded an increase in ozone concentrations by 1-3 µg.m^{-3} per year on average. Following the year 1990, in line with other European monitorings, the trend slowed down and even stopped. This trend relates to the European trend in the generation of ozone precursors. The following chart shows the **annual characteristics in the ozone concentration** at regional stations of Chopok, Starina, Stará Lesná, Topoľníky, and Liesek. Stará Lesná shows the longest timeline in ozone measurements. Highest average annual concentrations of ground ozone in 2005 were at the Chopok mountain stations (96 µg.m^{-3}). This relates to high ozone concentration in the zone of the accumulated tropospheric ozone above the European territory. Ground ozone concentrations in Slovakia in 2005 were only slightly below the level reached in the exceptionally hot year of 2003.



Source: SHMI

Volatile organic compounds $C_2 – C_6$

Volatile organic compounds $C_2 – C_6$ or the so-called light carbohydrates began to be captured at the Starina station in the Fall of 1994. Starina belongs to the few European stations classified listed under the EMEP network, with regular monitoring of volatile organic compounds. They are evaluated according to the EMEP methodology and the NILU. Their concentrations range between individual units to hundreds of units ppb. In 2005, most of hydrocarbons showed similar values as in 2004; significantly higher values were shown in n-hexane, toluene, propane, and isoprene. On the contrary, the butane values dropped. Analyses of volatile organic compounds of identical air samples were carried out at SHMI and at NILU, where the initial years showed a high degree of identity in precision of analyses. SHMI also participated in monitoring within the AMOHA Project (Accurate Measurements of Hydrocarbons in Atmosphere), organized by the NPL (National Physical Laboratory) in England. Its final outcome will be a European Directive for the optimal sampling and evaluation of hydrocarbons.

Average annual VOC concentrations in ambient air in 2005 - Starina (in ppb)

ethane	ethane	propane	propane	i-butane	n-butane	acetylene	butane	pentene	i-pentane	n-pentane	isoprene	n-hexane	benzene	toluene	o-xylene
2.046	0.662	0.974	0.192	0.243	0.379	1.291	0.058	0.038	0.422	0.225	0.127	0.104	0.351	0.090	0.366

Source: SHMI

Whoever is performing an activity, which could have an impact on the ***condition of the surface waters and underground waters, and of water situation,*** *is obliged* ***to exert the necessary effort to provide for their preservation and protection.***

§ 30 par. 1 of the Act No. 364/2004 Coll. on Waters and on Amendment of Act No. 372/1990 Coll. on Offences as amended (Waters Act)

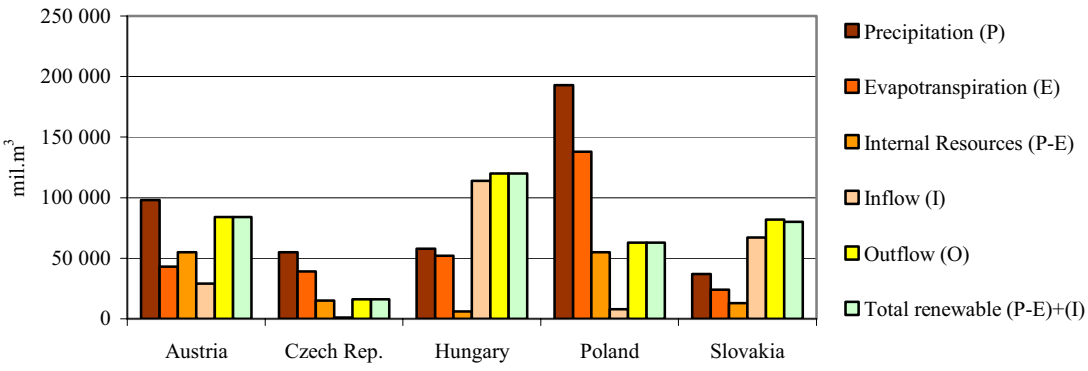
• WATER

Water sources and water fund

Slovakia is a central-European country with the majority of its territory belonging to the West Carpathian mountain range. Only the very north-eastern territory belongs to the East Carpathians and is part of the Carpathian eco-region. Less than a quarter of the whole Slovak territory is lowland – with the Vienna Basin from the west, the Panonia Plane from the south-west, and the Great Danube Basin from the south-east. These are part of the Hungarian lowland eco-region.

Significant part of the Slovak surface water fund flows in from the neighboring states and the usability of this fund is limited. In total, the long-term in-flow average is approximately 2.514 $m^3.s^{-1}$ of water, which is about 86 % of our total surface water fund. In the long run, there is approximately 398 $m^3.s^{-1}$ of water springing in Slovakia, which represents 14 % of the water fund. Due to its fluctuating characteristics the Slovak water potential is not able to meet the economic demand of the major economic and residential agglomerations, and it is necessary to increase its volume also by building water tanks.

Long term freshwater resources in the selected countries in 2004



Source: Eurostat

Surface water

♦ Precipitation and runoff conditions

Atmospheric precipitations balance in the Slovak territory in 2005 reached the value of 938 mm, which represents 123 % of the normal level. In terms of precipitations, this year had been considered very humid. In total, the year was evaluated as showing an excessive precipitation activity by as much as 176 mm.

Average total precipitation in the area of the SR

Month	I.	II.	III.	IV.	V.	VI.	VII.	VIII.	IX.	X.	XI.	XII.	Year
Mm	69	69	23	87	83	73	112	157	65	16	51	133	938
% normal	150	164	49	158	109	85	124	194	103	26	82	251	123
Surplus (+)/ Deficit (-)	23	27	-24	32	7	-13	22	76	2	-45	-11	80	176
Character of rainfall period	V	VV	SS	VV	N	N	V	VVV	N	SS	N	VVV	VV

Characteristics of the precipitation season: N - normal, S - dry, SS - very dry, V – humid, VV – very humid, VVV – exceptionally humid

Source: SHMI

Depending on the character of the precipitation season, virtually all Slovak watersheds may be considered as very humid, with the exception of the Danube, Morava, and Slaná watersheds that showed normal to humid precipitation characteristics. On the contrary, the Hornád watershed was exceptionally humid.

Average rates of precipitation and runoff in particular catchment areas

Catchment area	Dunaj		Váh		Hron			Bodrog a Hornád				SR
Subcatchment area	*Morava	*Dunaj	Váh	Nitra	Hron	*Ipeľ	Slaná	Bodva	Hornád	*Bodrog	*Poprad and Dunajec	
Catchment area extent (km^2)	2 282	1 138	14 268	4 501	5 465	3 649	3 217	858	4 414	7 272	1 950	**49 014**
Average precipitation (mm)	751	628	1 028	842	961	835	885	923	968	924	1 119	**938**
% of normal	110	100	122	121	122	122	112	126	143	131	133	**123**
Character of rainfall period	N	N	VV	VV	VV	VV	V	VV	VVV	VV	VV	**VV**
Annual runoff (mm)	61	51	343	136	264	158	191	144	301	330	514	**207**
% of normal	52	142	96	86	83	101	91	68	133	140	146	**79**

* watercourses and corresponding data only for the Slovak part of the watershed

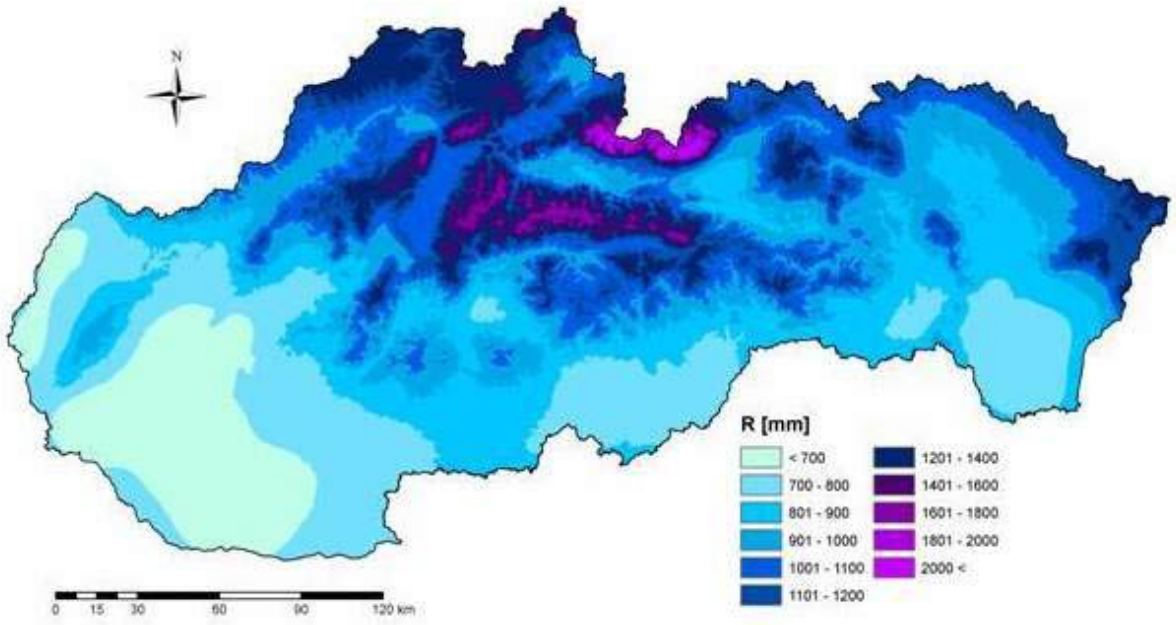
Source: SHMI

Characteristics of the precipitation season: N - normal, S - dry, SS - very dry, V – humid, VV – very humid, VVV – exceptionally humid

The precipitation total by individual watersheds and its distribution in 2005 was shown in the annual runoff volumes from the major watersheds in the following manner: annual runoff volume from partial watershed reached or exceeded 100 % of the long-term average in the Danube, Hornád,

Bodrog, Poprad, and Dunajec watersheds. In the Morava watershed, the annual runoff volume reached only 52 % of the long-term average, and in other watersheds the runoff volume oscillated between 68 to 96 % of the corresponding long-term values.

Annual atmospheric precipitation (mm) in Slovakia in 2005



Source: SHMI

♦ **Water balance**

In 2005, there was 69 806 mil.m^3 flowing into Slovakia, which is by 8 624 mil.m^3 more than in the previous year of 2004. Compared to the previous year, **runoff** from the territory was greater by 8 700 mil.m^3.

As of 1.1.2004, **total water volume** in water reservoirs was 631.0 mil.m^3, which represented 54 % of total usable water volume in water reservoirs. As of 1.1.2005, total available volume of the assessed water reservoirs compared to the previous year increased to 721 mil.m^3, which represents 62 % of total available water.

Total hydrological balance of water resources in the SR

	Volume (mil. m^3)		
	2003	**2004***	**2005**
Hydrological balance:			
Rainfall	28 088	41 715	46 029
Annual inflow to the SR	53 626	61 182	69 806
Annual runoff	60 527	71 279	79 979
Annual runoff from the territory of the SR	7 009	10 097	10 173
Water management balance			
Total abstraction of the surface and ground water in the SR	1 040.20	1 028.00	906.89
Evaporation from water reservoirs and dams	61.8	54.30	5.07

Discharge into surface waters	910.4	955.70	872.00
Impact of water reservoirs (WR)	272.8	355.60	111.61
	improving	**accumulation**	**improving**
Total volume in WR as of 1st January of the following year	573	631	721
% of supply volume in accumulation WR in the SR	49	54	62
Rate of water exploitation (%)	14.8	10.18	8.91

* Note: Data in the table were updated with results from the 2004 assessment Source: SHMI

♦ **Surface water abstraction**

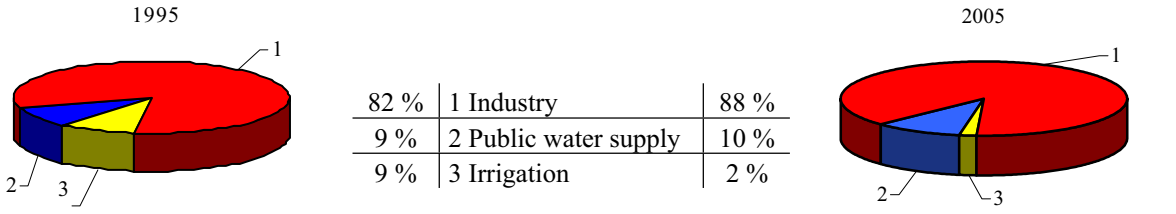
Surface water abstraction in 2005 reached the value of 532 791 mil.m^3, which, compared to the previous year, is a reduction by 21.7 % (compared to 1995, the reduction is 275 mil.m^3, which is 34.1 %). Surface water abstraction for industrial purposes in 2005 represented as much as 88 % of total abstraction volume, which, compared to 2004, was a reduction by 136 770 mil.m^3, that is 22.6 %. A slight reduction was recorded also in surface water abstractions for the public water-supplies, which, compared to the previous year, dropped by 2.16 mil.m^3, that is 3.8 %. These abstractions represented 10 % of total abstractions. In 2005, surface water abstraction for irrigation represented only 2 % of total abstractions and reached the value of 11.01 mil.m^3.

Surface water exploitation in the SR (mil.m^3)

Year	Public water-supplies	Industry	Irrigation	Other agriculture	Total	Discharging
2003	66.449	489.467	65.042	0.0094	620.968	910.426
2004	55.984	604.728	18.935	0.0076	679.723	919.222
2005	53.828	467.957	11.006	0.0110	532.791	871.865

Source: SHMI

Comparison of surface water exploitation between 1995 and 2005

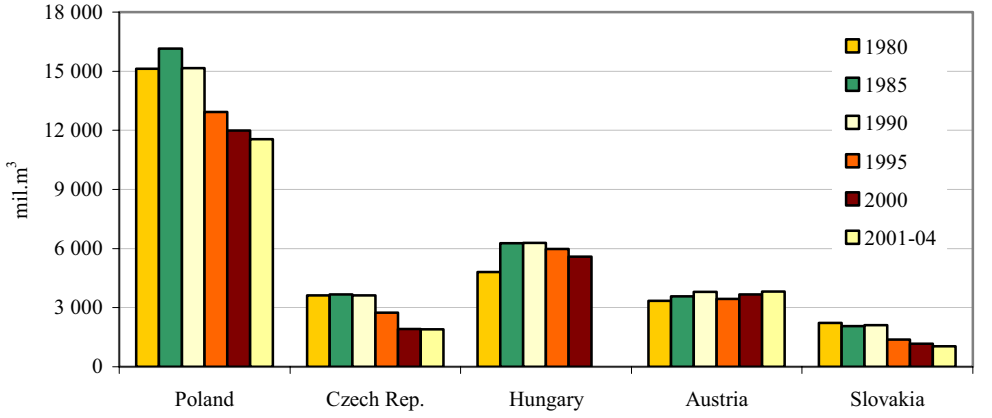


82 %	1 Industry	88 %
9 %	2 Public water supply	10 %
9 %	3 Irrigation	2 %

Source: SHMI Source: SHMI

Decreasing trend in surface water abstraction was shown also in the neighboring countries. Surface water abstraction in the 15 EU countries is at the value of 175 700 mil.m^3.

Water abstraction in the neighboring countries between 1980 – 2004



Source: OECD

♦ **Surface water quality**

The basis for surface water quality assessment is the summary of all classification results under the **STN 75 7221 STANDARD "Water Quality".** Surface water quality classification evaluates water quality through 8 indicator groups of determinants (group A - oxygen demand, group B - basic physical and chemical determinants, group C - nutrients, group D - biological determinants, group E - microbiological determinants, group F – micropollutants, group G – toxicity, group H – radioactivity). Using the threshold values system, water is classified into five quality categories (I. class - very clean water, through V. class – extremely heavily polluted water), while categories I., II., and III. are considered as favorable water quality.

Program of water level monitoring includes surface and ground water quality assessment, which has been carried out on the basis of data obtained from water levels monitoring process.

Water quality monitoring in 2005 was carried out pursuant to the approved Program of Water Level Monitoring at 178 national sampling sites network, which include 175 basic, 3 special sampling sites designated to monitor radioactivity, while 30 sampling sites were monitored as boundary watercourses. Since 2004, water courses and selected water tanks have been included into the state monitoring system. Frequency of individual indicators monitoring in 2005 varied and oscillated between 1-24 times. Indicators with the lower frequency include biological determinants, heavy metals, and specific organic compounds.

In 2004-2005, more than 77 % of the group **A – oxygen demand** sampling sites complied with the conditions of the groups I., II., and III., meeting the acceptable quality criteria (175 sampling sites). Determinants groups **B - basic physical-chemical** (175 sampling sites), **C – nutrients** (175 sampling sites), and **D – biological determinants** (172 sampling sites) stayed at the level of the previous period of years and dominate in the II. and III. quality class. There was 88 % of sampling sites that complied

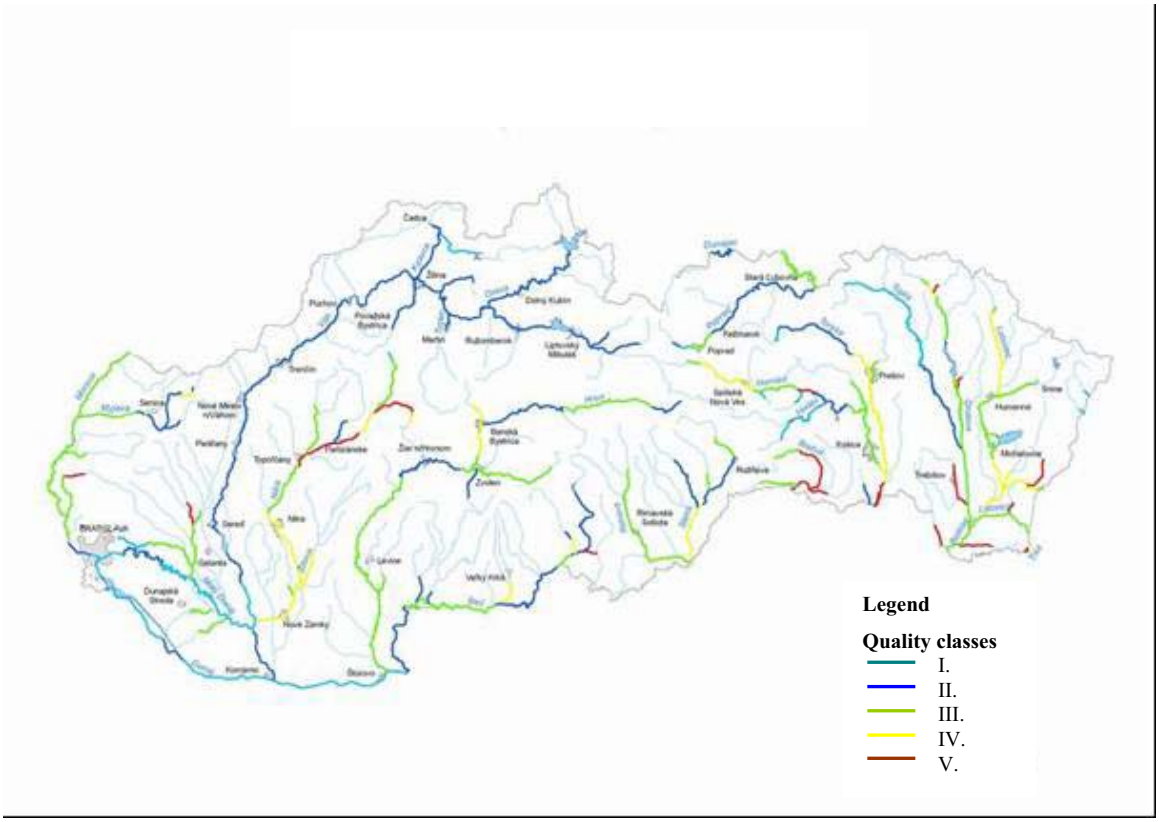
with the B indicators group (in 2002-2003 it was 73.5 % of sampling sites), while there was 64 % of extraction sites in the C determinant group (in 2002-2003 it was 70.1 %), and 83.14 % of extraction sites fell under the D quality group (in 2002-2003 it was 60.9 %). Number of sampling sites with acceptable surface water quality level in the E determinant group - microbiological determinant grew to 33.14 % (in 2002-2003 it was only 19.54 %), while in the F group - micro pollutants, the number of sampling sites dropped to 46.2 % (in 2002-2003 it was 54.5 %).

The 2004-2005 period of years showed a negative trend in the **E group - microbiological determinants** (175 sampling sites) that fall under the IV. and V. quality class, being the case of 66.86 % of all extraction (in 2002-2003 it was 80.46 %). Water quality improved significantly in the **F group – micro pollutants** (158 extraction sites) which showed unacceptable water quality (IV. and V. class) at 53.8 % of extraction sites (in 2002-2003 it was 45.4 %).

Compared to the previous period, the number of sampling sites with unacceptable (group IV. and V.) quality class increased only in the A group - oxygen demand, to 22.85 %, while in other groups there was a reduction in sampling sites - in the B group – physical-chemical determinants they dropped down to 12 % of sampling sites, in the C group – nutrients it was down to 36 %, and down to 16.6 % in the D group – biological indicators.

Water quality in the **H group of determinants - radioactivity** (31 sampling sites) for the monitored period complied with the I., II., and III. water quality class.

Surface water quality categories in the group A – oxygen demand in years 2004 – 2005



Source: SHMI

Legend: I. Class – very clean water (blue), II. Class – clean water (dark blue), III. Class – polluted water (green), IV. Class – heavily polluted water (yellow), V. class – very heavily polluted water (red)

Proportional representation of the water quality categories at the sampling points of the observed watercourses

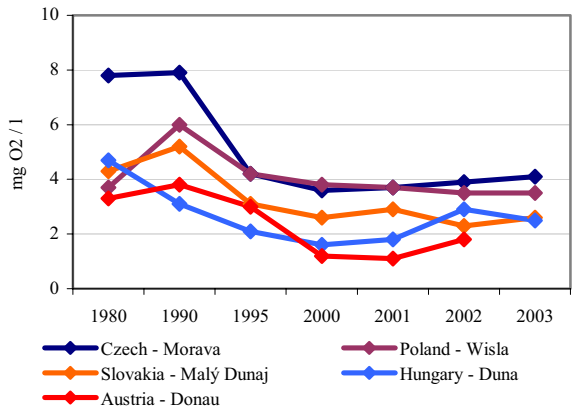
Water quality category according to STN 75 7221 standard	Year	A Oxygen demand indicators		B Basic physical and chemical indicators		C Nutrients		D Biological indicators		E Microbiological indicators		F Micropollutants		G Toxicity		H Radioactivity	
		Number of sampling points	%	Number of sampling points	%	Number of sampling points	%	Number of sampling points	%	Number of sampling points	%	Number of sampling points	%	Number of sampling points	%	Number of sampling points	%
1	2000-01	12	6.90	5	2.90	4	2.30	-	-	-	-	11	7.70	-	-	15	51.70
	2001-02	9	5.10	4	2.20	2	1.10	-	-	-	-	4	2.90	-	-	15	50.00
	2002-03	11	6.32	0	0	2	1.15	0	0	0	0	9	6.29	-	-	13	56.52
	2004-05	**23**	**13.14**	**11**	**6.29**	**0**	**0**	**0**	**0**	**0**	**0**	**8**	**5.06**	**-**	**-**	**22**	**70.97**
2	2000-01	60	34.30	79	45.10	64	36.6	36	20.60	1	0.60	4	2.80	-	-	14	48.30
	2001-02	81	45.50	67	37.60	70	39.3	29	16.30	1	0.60	12	8.80	-	-	14	46.70
	2002-03	81	46.55	56	32.18	71	40.80	34	19.54	2	1.15	23	16.08	-	-	10	43.48
	2004-05	**60**	**34.3**	**93**	**53.14**	**37**	**21.14**	**89**	**51.74**	**6**	**3.43**	**12**	**7.6**	**-**	**-**	**7**	**22.58**
3	2000-01	68	38.90	66	37.70	61	34.90	109	62.30	12	6.90	35	24.50	-	-	-	-
	2001-02	68	38.20	84	47.20	58	32.60	106	59.50	23	12.90	45	32.80	-	-	1	3.30
	2002-03	64	36.78	72	41.38	49	28.16	72	41.38	32	18.39	46	32.17	-	-	-	-
	2004-05	**52**	**27.71**	**50**	**28.57**	**75**	**42.86**	**54**	**31.4**	**52**	**27.71**	**53**	**33.54**	**-**	**-**	**2**	**6.45**
4	2000-01	21	12.00	18	10.30	29	16.60	25	14.30	88	50.30	77	53.90	-	-	-	-
	2001-02	10	5.60	17	9.60	32	18	37	20.80	108	60.70	67	48.90	-	-	-	-
	2002-03	10	5.75	36	20.69	31	17.82	45	25.86	102	58.62	47	32.87	-	-	-	-
	2004-05	**23**	**13.14**	**17**	**9.71**	**38**	**21.71**	**28**	**16.28**	**82**	**46.86**	**51**	**32.28**	**-**	**-**	**-**	**-**
5	2000-01	14	8.00	7	4.00	17	9.70	5	2.90	74	42.30	16	11.20	-	-	-	-
	2001-02	10	5.60	6	3.40	16	9	6	3.40	46	25.80	9	6.60	-	-	-	-
	2002-03	8	4.60	10	5.75	21	12.07	23	13.22	38	21.84	18	12.59	-	-	-	-
	2004-05	**17**	**9.71**	**4**	**2.29**	**25**	**14.29**	**1**	**0.58**	**35**	**20.00**	**34**	**21.52**	**-**	**-**	**-**	**-**
Total	2000-01	175	100	175	100	175	100	175	100	175	100	143	100	-	-	29	100
	2001-02	178	100	178	100	178	100	178	100	178	100	137	100	-	-	30	100
	2002-03	174	100	174	100	174	100	174	100	174	100	143	100			23	100
	2004-05	**175**	**100**	**175**	**100**	**175**	**100**	**172**	**100**	**175**	**100**	**158**	**100**	**-**	**-**	**31**	**100**

Source: SHMI

Since 1980, there has been a decreasing trend in the pollution of watercourses also in the other V4 countries and Austria.

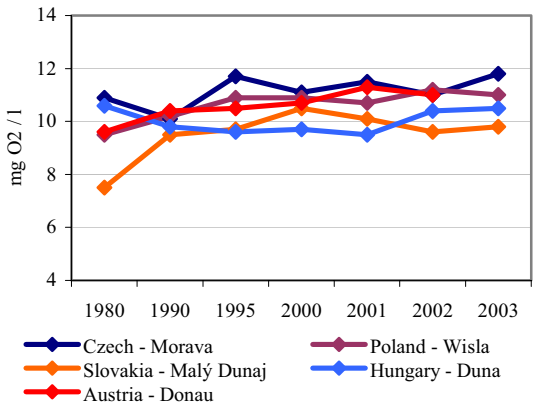
Comparison of the surface water quality development in the selected watercourses

BOD (mg O_2. l^{-1})



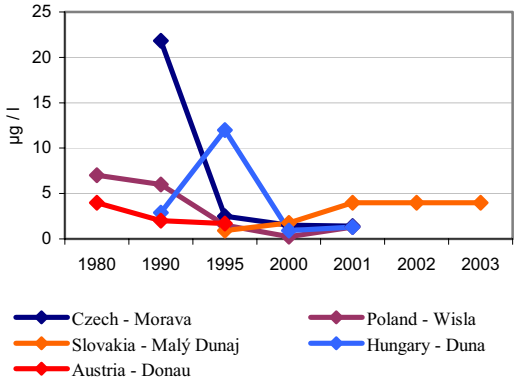
Source: OECD

Dissolved oxygen (mg O_2. l^{-1})



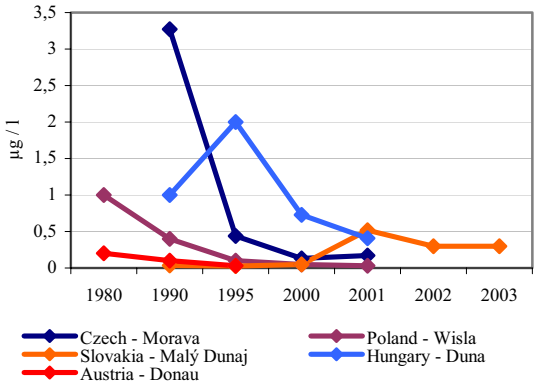
Source: OECD

Lead (µg. l^{-1})



Source: OECD

Cadmium (µg. l^{-1})



Source: OECD

Note: Average annual concentrations measured at the outflow points of watercourses or at their national border-line lower section.

Ground water

♦ Water resources

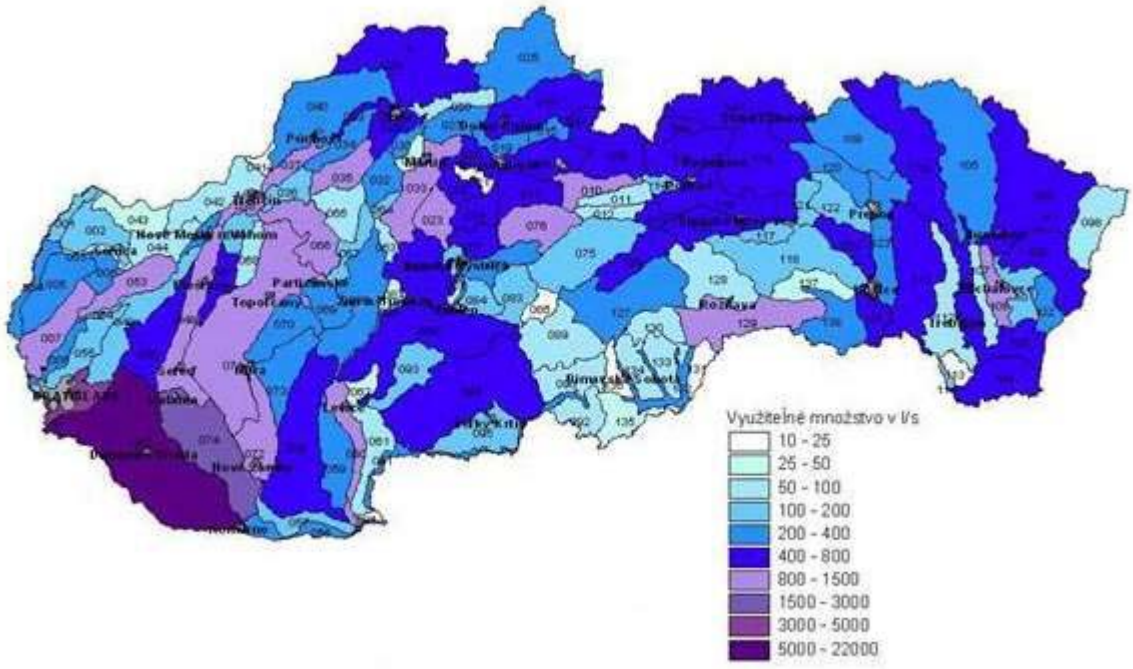
Groundwater is an irreplaceable component of environment. It represents an invaluable, yet easily accessible and most appropriate source of drinking water in terms of its quantitative, qualitative, and economic aspects. Despite favorable hydrological and hydro-geological conditions undermining the generation, circulation and accumulation of groundwater in Slovakia its uneven distribution offsets these advantages. The most significant groundwater volumes are recorded in the Bratislava and Trnava regions (46 %), while the least groundwater volumes are documented in areas of the Prešov and Nitra regions.

In 2005, based on the hydro-geological assessment and surveys in Slovakia, there were **76 806 l.s^{-1}**

available groundwater resources. Compared to the previous year of 2004, there was an increase in available groundwater volume by 257 $l.s^{-1}$, which is by 0.34 %. In the long run increase in available volume is 2 031 $l.s^{-1}$, that is 2.7 %, compared to 1990.

Greatest groundwater volumes are bound to the Quaternary and the Mesozoic hydro-geological structures or regions. By far, the greatest number of the available volumes (24.8 $m^3.s^{-1}$) has been documented in Europe's unique structure that stores great volumes of high-quality groundwater – the Podunajská lowland (the Žitný island). The area is represented by a strong Quaternary-Pliocene system of gravel and sand layers that also show the greatest abstractions of drinking water, while water from this area is used to supply the inhabitants through remote aqueducts going to central Slovakia and the Záhorie region.

Efficient groundwater volumes in the hydrogeological regions in 2005 ($l.s^{-1}$)



Source: SHMI

♦ **Groundwater levels**

Trend in groundwater levels and spring yields over the course of the year copies climatic indicators that ultimately impact the year's characteristics. For this reason trend in groundwater level and spring yield is not uniform within the same territory, since the orographic character of the territory plays an important role in the overall trend.

From the climatology point of view, trend in the overall precipitation in Slovakia was not uniform. Distribution of precipitation figures by individual territories and months is not uniform. Exceptionally high precipitation figures were recorded in April, August, and in December. The region of West Slovakia showed slightly abnormal annual characteristics (+109 mm above normal), while Middle

Slovakian regions (+189 mm above normal) and East Slovakian regions (+1 209 mm above normal) showed increased precipitation figures and we characterize them as humid.

In 2005, the highest annual recorded values of groundwater levels and spring yields in lowlands were dominant in the spring season, from the end of March till the beginning of June, occasionally in August. With increasing altitudes, occurrence of the greatest groundwater levels and spring yields delays until May or June. Occurrences of maximal spring yields also in higher altitudes were recorded only at the local level. Minimal groundwater levels and spring yields were recorded mainly during the winter season, in November and December, while for the springs alone, minimal yields persisted until March.

Recently, exceeding of the long-term maximal levels or spring yields or not reaching the minimal levels or spring yields become more frequent, which also may be caused by either a relatively short monitoring scale or weather fluctuations over the year - increased extreme periods, such as long drought, flood, and excessive rain episodes.

♦ **Gabčíkovo interest area**

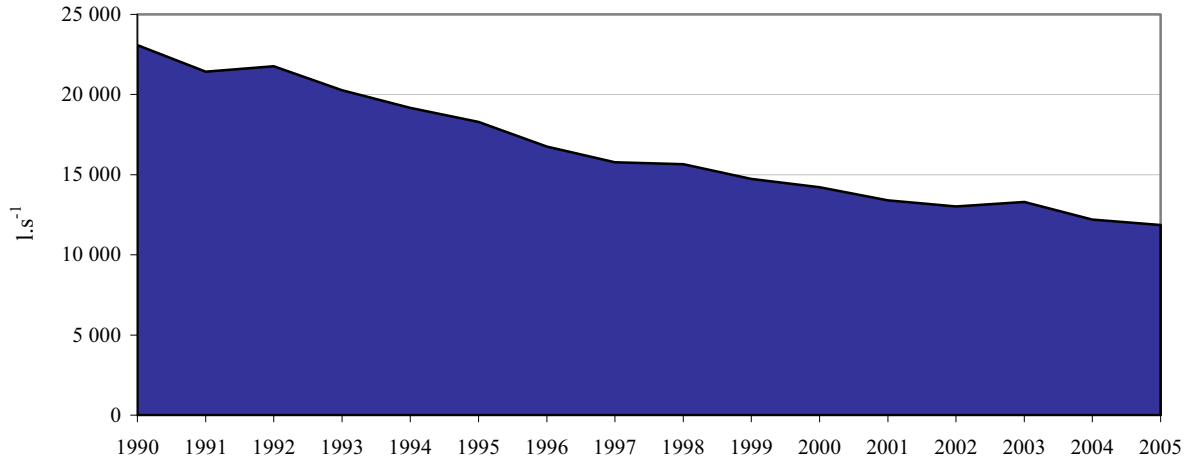
Groundwater balance in the area of the Žitný island is influenced by the presence of the Gabčíkovo water dam. Reduced water flow in the old Danube canal has been improved by letting more water into the affluent canal VD (during July) through the feeding gateway at Dobrohošť (appr. 30 $m^3.s^{-1}$). This additive measure gradually increased water level and besides having a positive impact also on groundwater levels. it revived the surrounding fauna and flora in the whole watershed area.

The runoff balance below the Gabčíkovo VD (just below the outflow of the draining canal) has been impacted only very little. This place shows more fluctuation in the momentary states and runoffs not only in the Danube watercourse itself, but also in groundwater levels. Regulating the flows at the Dobrohošť feeding gateway, it is possible to maintain the flow and level balance similar to the one that existed naturally (including the floods).

♦ **Groundwater abstraction**

In 2005, total volume of **abstracted groundwater average was 11 867 $l.s^{-1}$**, which is 15.4 % of all recorded available volumes. Over the course of 2004, ground water abstractions again showed a reduction, this time is was milder - only by 333.3 $l.s^{-1}$, which is a reduction by 2.7 %, compared to 2004.

Progress of groundwater extraction in Slovakia



Source: SHMI

After a more rigorous evaluation of groundwater abstraction in Slovakia by individual purposes we could see reduced water abstraction for most of the monitored abstraction categories with the exception of abstractions for irrigation (45 %) and other use (5 %) which showed an increase. Compared to 2004 groundwater abstractions for public water-supply purposes showed most reduction. by 27.6 $l.s^{-1}$ (-2.8 %) social purposes by 47.3 $l.s^{-1}$ (-14.4 %) and other industries by 44.9 $l.s^{-1}$ (-4.9 %).

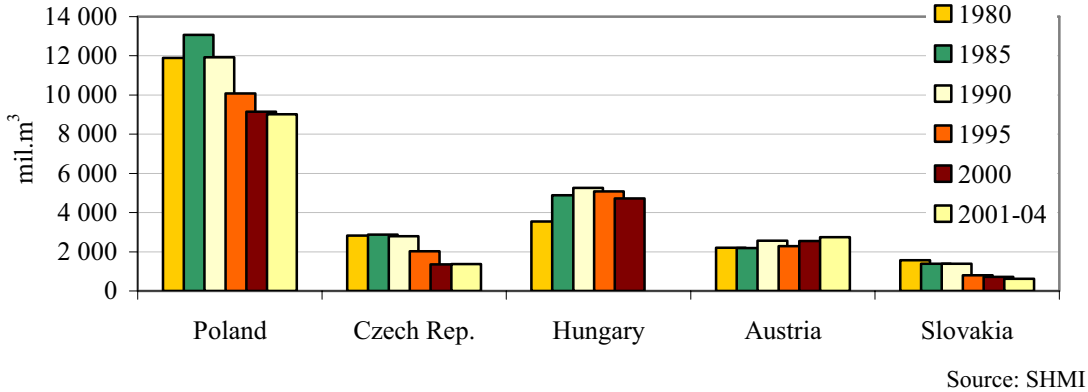
Groundwater extraction in 2005 according to the purpose of use

Year	Public water supplies	Food-processing industry	Industry excl. Food-processing	Agricult. and Livestock	Vegetable prod.. Irrigation	Social purposes	Others	Total
2003	10 064.94	329.51	999.29	385.49	380.87	320.74	822.52	13 303.60
2004	9 431.53	322.04	901.65	320.51	65.17	327.02	832.93	12 200.85
2005	9 159.87	288.25	856.75	308.82	95.07	279.72	878.98	11 867.46

Source: SHMI

Groundwater abstraction balance has changed since 1980 also in the neighboring countries and groundwater use shows a falling trend.

Groundwater abstraction in the neighboring countries



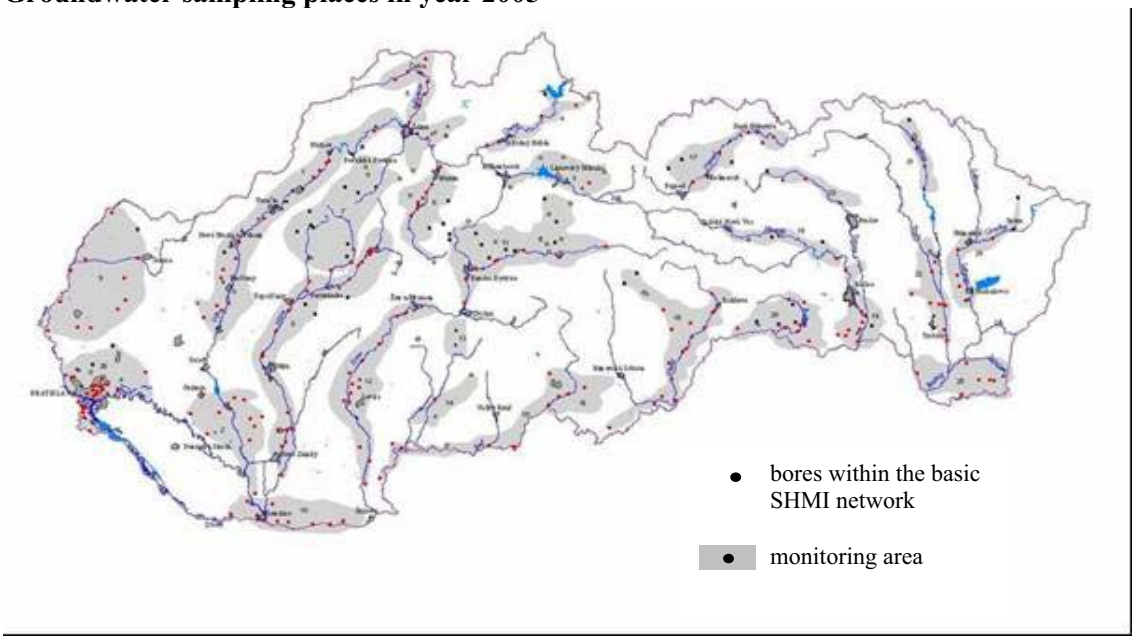
Source: SHMI

♦ Groundwater quality in Slovakia

Systematic groundwater quality monitoring has been carried out since 1982 under the **national monitoring program**. At present there are 26 monitored significant water management areas (river alluviums, Mesozoic and Neo-volcanic complexes). The monitoring now also includes the pre-Quaternary formations to meet the needs to obtain information on the trend in water quality in areas with a low anthropogenic impact.

In 2005, there were 334 objects monitored in total, which included 219 bores within the basic SHMI network, 25 used and 19 idle bores (investigative bores), 43 used and 28 idle springs.

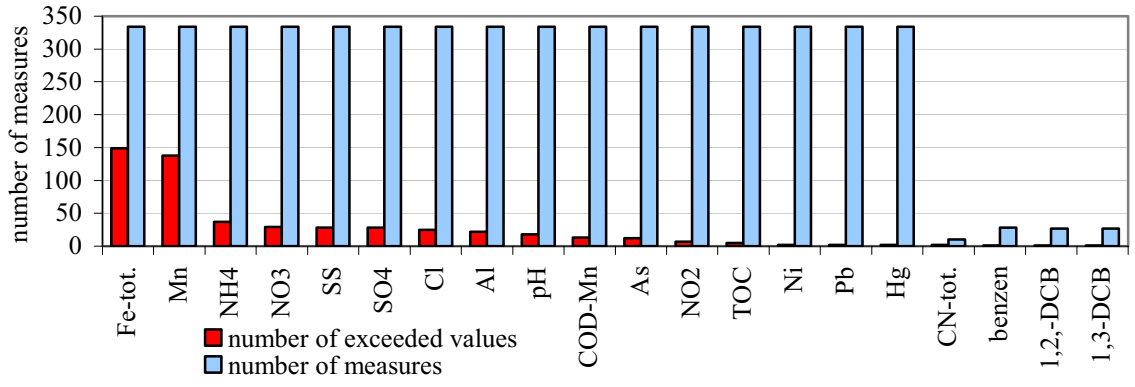
Groundwater sampling places in year 2005



Source: SHMI

Acceptable concentration figures (maximum acceptable concentration) defined under Regulation of the MoH SR No. 151/2004 Coll. on drinking water demands and drinking water quality, were exceeded in 2005 mostly for the following indicators: Fe_{total} (149 times), Mn (138 times), and NH_4^+ (37 times) out of the all 334 assessments.

Number of exceedings of the limit values of the concentrations of the particular indicators



Source: SHMI

The Figure suggests that there is a major issue of adverse **oxidation-reduction conditions** within the groundwater monitored areas documented by frequently increased concentrations in Fe, Mn, and NH_4^+.

Besides the already mentioned **physical-chemical indicators** concentrations of RL 105, SO_4^{2-} , and Cl^- anions were also exceeded.

Just like in the previous years, contamination by **organic substances,** indicated by exceeded acceptable COD-Mn concentration, is still present. Since in 2005, non-polar extractable substances were determined as the hydro-carbon index, we did not record any exceeding values for this indicator at any groundwater quality monitoring sites.

The on-going utilization of landscape within the monitored areas (urbanized and agriculture territories) is reflected in increased contents of the **oxidized and reduced nitrogen** forms in water (29 times in nitrates, 7 times in nitrites).

Most frequently recorded **trace elements** included increased aluminium (22 times) and arsenic (12 times) concentrations. In case of nickel, mercury, and lead, the limit values were exceeded 2 times, while in chrome, the limit was exceeded once in 2005.

Contamination by specific organic substances shows only local character and the majority of specific organic substances was recorded below the detection limit.

Percentage of exceeded limit values under Regulation of the MoH SR No. 151/2004 Coll. on drinking water demands and drinking water quality control (or STN 75 7111)

Indicator	Limit (according to regulation MoH SR No. 151/2004 Coll.)	Values over limit (%)		
		2003	2004	2005
Ammonium ions	**0.5 mg/l**	10.65	10.81	11.08
Magnesium	**10.0-30.0 (125)**	0	0	0
Manganese	**0.05 mg/l**	42.6	43.24	41.32
Iron	**0.2 mg/l**	40.5	44.44	44.61
Chlorides	**100 (250) mg/l**	7.39	6.61	7.49
Nitrites	**0.1 mg/l**	2.36	2.7	2.10
Nitrates	**50.0 mg/l**	8.87	10.51	8.68
Disulfates	**250 mg/l**	7.98	8.11	7.78
COD_{Mn}	**3.0 mg/l**	4.73	7.51	3.89
Aluminium	**0.2 mg/l**	2.36	5.71	6.59
Mercury	**0.001 mg/l**	0.29	0.3	0.60
Arsenic	**0.01 mg/l**	6.21	3.9	3.59
Chrome	**0.05 mg/l**	0	0	0.30
Nickel	**0.02 mg/l**	0.59	0.3	0.60
Mercury	**0.01 mg/l**	0.29	0.3	0.60
FN1		0.29	0.3	-
Humin substances		2.36	2.1	-
EPN_{UV}		22.18	18.92	-
1.1.-dichloretene		22.72	0	2.38
PCE	**10 µg/l**	0	0	-
DDT		0	0	0
Heptachlorine		0	0	0
HCB		0	0	0
Lindane		0	0	0
Metoxychlorine		0	0	0

FN1: phenols released in vaporized water
PCE: 1.1.2.2-tetrachloretylene

Source: SHMI

Waste Water

Decreasing trend in discharged waste water remained also in 2005, 881 946 thous.m^3 of **waste water** was discharged into surface watercourses in Slovakia, which represents a reduction by 37 923 thous.m^3 (4.3 %) compared to 2004, and a drop by 285 978 thous.m^3 (25 %) compared to 1995. Most significant reduction in waste water load was recorded in insoluble substances (IS), by 8 719 t.year^{-1}, and in chemical oxygen demand by dichromate (COD), by 7 850 t.year^{-1}, while there was only a slight reduction in other indicators.

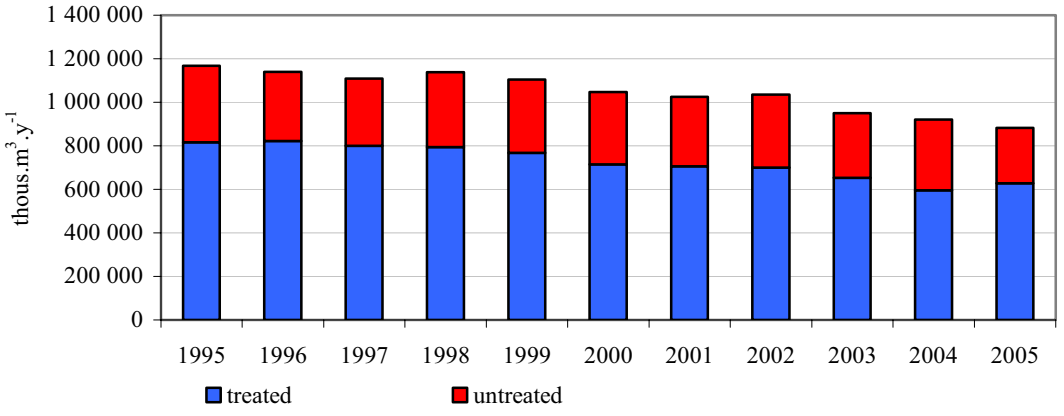
Percentage of discharged treated waste water to **total volumes of waste water** discharged into watercourses in 2005 was 71.2 %.

Load of the balanced contamination sources discharged into surface watercourses in the period of years 1995 - 2005

Discharged waste water	Volume (thous.m^3.y^{-1})	IS (t.y^{-1})	BOD_5 (t.y^{-1})	COD_{Cr} (t.y^{-1})	ENP_{uv} (t.y^{-1})
1995	1 167 924	45 044	32 227	87 894	879
2002	1 035 068	22 790	18 803	59 204	252
2003	950 686	21 193	17 372	56 829	232
2004	919 869	21 389	13 702	45 162	57
2005	881 946	12 670	10 661	37 312	55

Source: SHMI

Trend in discharging of the treated and untreated waste waters into watercourses in the period of 1995 - 2005



Source: SHMI

The currently valid Water Act and its legal provisions draw on the EC legislation, for example the European Parliament and the Board Directive No. 2000/60/EC, the so called Framework Directive on Water and Board Directive 91/271/EEC relating to treatment of municipal waste water, adopted May 21, 1991. This Directive addresses one of very significant environmental pollution sources – municipal waste water. The Directive addresses collection, treatment, and discharge of municipal

wastewater and water from specific industries, as well as handling the sludge generated during treatment of municipal waste water.

Proportion of waste water treatment in specific parameters of Directive 91/271//EEC

Category	< 2000 EO	2001 – 10 000 EO	10 001 – 15 000 EO	15 001 – 150 000 EO	> 150 001 EO	Average
COD_{Cr}	78.2 %	91.5 %	90.0 %	90.4 %	66.7 %	**85.37 %**
BOD_5	64.1 %	78.0 %	80.0 %	76.9 %	66.7 %	**72.20 %**
IS	73.1 %	91.5 %	80.0 %	88.5 %	66.7 %	**82.44 %**
N_{total}	-	-	20.0 %	19.2 %	33.3 %	**20.59 %**
P_{total}	-	-	10.0 %	23.1 %	50.0 %	**23.53 %**

Source: WRI

Mentioned values show that the level of treatment in the smallest agglomerations that are not so demanding in terms of the depth of purification is relatively poor, and the ratio of acceptable waste water treatment plants to all plants is little below three quarters. Majority of middle-sized and large municipal WWTPs used to be designed and built to meet lower qualitative requirements than those existing today. For that reason, today there are extensive reconstructions and intensifications of run-off networks and WWTPs.

Public water supply, sewerage systems and waste water treatment plants

- **Public water supplies**

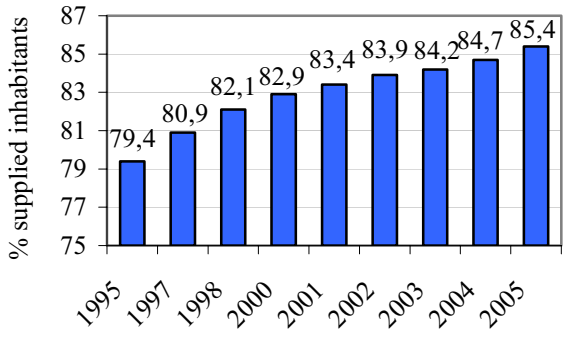
Number of inhabitants supplied with drinking water from the public water supply in 2005 reached the number of 4 605 thousand, which represented 85.4 % of supplied inhabitants. In 2005, there were in the SR 2 196 individual municipalities that were supplied with public water supply, and their portion on total SR municipalities was 76 %. Compared to 2004, share of supplied municipalities increased in the Trnava region (84.5 %), Bratislava region (95.5 %), and Žilina region (98.7 %). However, compared to 2004, Trenčín, Banská Bystrica, Prešov, and Košice regions showed unchanged number of municipalities with public water supply.

The year 2005 showed only a minimal reduction in drinking water abstraction. **Volume of produced drinking water** in 2005 reached the value of 352 mil.m^3, which compared to 2004, represents a reduction only by 1 mil.m^3. Of all the ground water sources, 299 mil.m^3 was produced (increased by 3 mil.m^3), while 53 mil.m^3 of drinking water was produced of all surface water sources, (reduction by 4 mil.m^3). Of total water produced at water management facilities, **water losses** by pipe network were 27.9 % in 2005. **Specific water consumption for households** increased in 2005 to 104 l.inhab^{-1}.day^{-1} (in 2004 it was 101.1 l.inhab^{-1}.day^{-1}).

Also other countries showed a decreasing trend in the annual water consumption from public water supplies per capita. Czech Republic and Slovakia are approximately at the same level in terms of

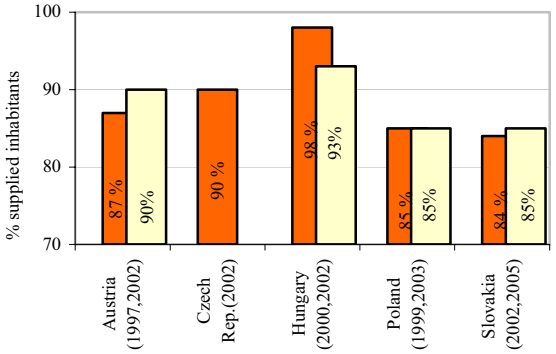
water consumption, while Poland shows the least consumption – only 57 m^3.$inhab^{-1}$.year, Hungary shows the best characteristics with having as much as 93 % of its inhabitants supplied with drinking water from public water supplies.

Drinking water supplying of the inhabitants from the public water supplying in the SR



Source: SO SR

Comparison of the drinking water supplying of the inhabitants from the public water supplying in selected countries



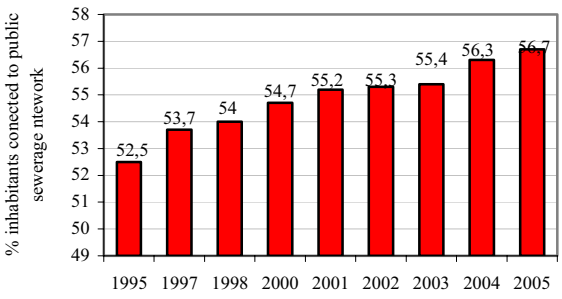
Source: OECD, SO SR

♦ **Sewerage system**

Number of inhabitants living in households **connected to public sewerage systems** in 2005 grew by 25 thousand, compared to 2004, and reached the number of 3 055 thous. inhabitants, which is 56.7 % of all inhabitants. In 2005, there were 612 municipalities in Slovakia (i.e. 21.2 % of all Slovak municipalities) with a built public sewerage network, while 545 municipalities (i.e. 18.9 % of all Slovak municipalities) had their wastewater sent directly off to the wastewater treatment plant. In 2005, the greatest increment in municipalities with public sewerage system was in the Bratislava region (54.8 %), while other regions showed only a minimal growth.

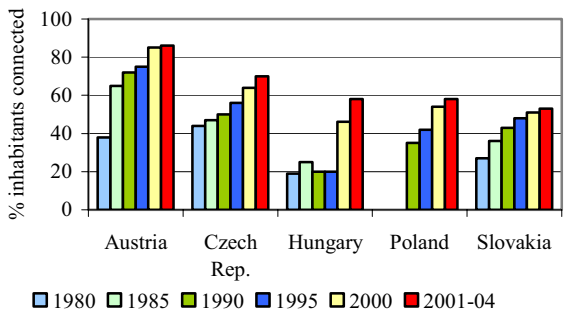
Greatest level of connectedness of the public to the public sewerage system from among the V4 countries reached Austria (86 %), and the Czech Republic (70 %), Poland, Hungary, and Slovakia show approximately the same level of connectedness, 56 % on average.

Connecting of the inhabitants to the public sewerage network in the SR (%)



Source: SO SR

Comparison of the connecting of the inhabitants to the public sewerage network in the selected countries (%)

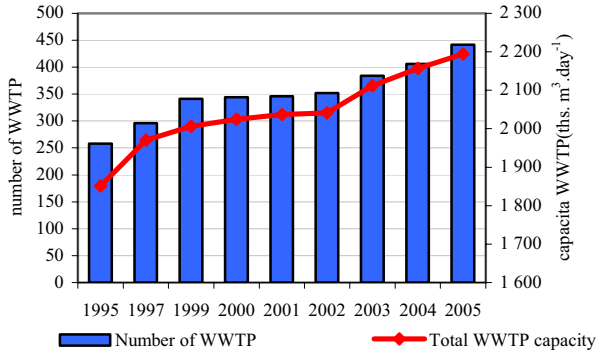


Source: OECD

♦ **Waste water treatment plants**

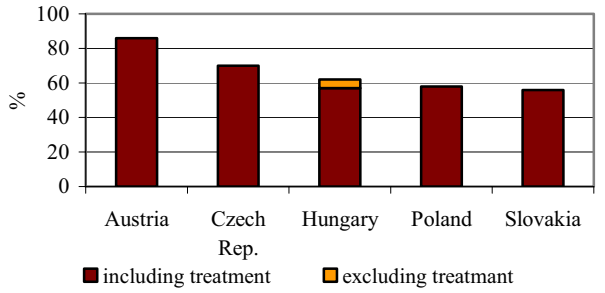
In 2005, there were 442 wastewater treatment plants administered by the VaK company and individual municipalities in Slovakia, and their number grew by 36, compared to 2004. Greatest share on these had mechanical-biological WWTPs (85.3 %). Also, the WWTP capacity changed, in 2005, it was 2 194 $m^3.day^{-1}$ (in 2004 it was 2 157 thous.$m^3.day^{-1}$).

Development in number and capacity of WWTP



Source: SO SR

Comparison of the connection of the inhabitants to the wastewater treatment plants in the selected countries



Source: OECD

In 2005, watercourses with public sewerage system (administered by municipalities and water management companies) received 443 mil.m^3 of discharged waste water, which was by 5 mil.m^3 more than in the previous year, and the volume of treated waste water discharged into the public sewerage system in 2005 reached 428 mil.m^3.

Waste water treatment plants with the secondary purification level are most developed in the V4 countries. In 2002 in Austria, as much as 80 % of wastewater was treated at biological WWTPs with chemical post-treatment (tertiary level of wastewater purification). In relation to the approximation of law within the EC, more attention will be given to this purification level also in Slovakia.

Volume of the discharged wastewater by the public sewerage system (in administration of VaK and in administration of the municipalities) and WWTP in 2005

Water discharged by the public sewerage and WWTP	Sewage	Industrial and other	Precipitation	Separate	Administration of the municipalities	Total
	(thous.$m^3.year^{-1}$)					
Treated	122 043	92 532	42 355	161 052	10 206	428 188
Untreated	2 829	1 405	1 892	6 290	2 658	15 074
Total	124 872	93 937	44 247	167 342	12 864	443 262

Source: WRI

Sludge from WWTPs is a necessary by-product of the wastewater treatment process. In 2005, there were 56 360 tons of the sludge dry matter produced in municipal WWTPs. Significant sludge volumes – 39 120 tons were recycled through their application into the agricultural land (69.4 %).

WWTPs temporarily stored 8 710 tons (15.5 %) while 8 530 tons (15.1 %) of waste was stored at landfills. In 2005, only 5 870 tons of sludge dry matter was directly applied into the agricultural land, 28 910 tons of sludge dry matter was used for compost production, while 4 340 tons of sludge was used for land purposes through different ways (recultivation, etc.).

Sludge produced in the waste water treatment plant

Year	Amount of the sludge (tons of dry residue)							
	Total	Used			Disposed			
		Applied into the agricultural soil	Applied into the forest soil	Composted and used in other way	Incinerated	Land filled		In other way
						Total	Suitable for the further use	
2002	52 149	42 836	0	0	0	0	4 443	4 870
2003	54 340	16 640	605	22 085	0	8 110	7 610	6 900
2004	53 085	12 067	0	30 437	0	4 723	3 470	5 858
2005	56 360	5 870	0	33 250	0	8 530	6 960	8 710

Source: WRI

Drinking water

- **Drinking water quality monitoring and assessment**

In 2005, drinking water quality monitoring and assessment was carried out pursuant to the new **Regulation MoH SR No. 151/2004 Coll., on demands on drinking water and drinking water quality control.** The Resolution distinguishes a number of water quality indicators limit values, according to their corresponding health effects. Radiological indicators were determined in accordance with the Regulation of MoH SR No. 29/2002 Coll, on demands to ensure radiation control. In 2005, 12 353 samples were analysed at operation laboratories of water management companies. The samples were abstracted at sites located within distribution networks and 320 939 analyses were carried out to monitor individual drinking water quality indicators. Share of drinking water analyses that complied with the sanitary limits reached 99.23 % in 2005 (in 2004 it was 99.15 %). Percentage of samples that meet drinking water quality demands for all indicators reached 89.59 % (in 2004 it was 87.84 %). These samples did not include the active chlorine indicator, as this test was done separately, in relation to the microbiological quality of drinking water.

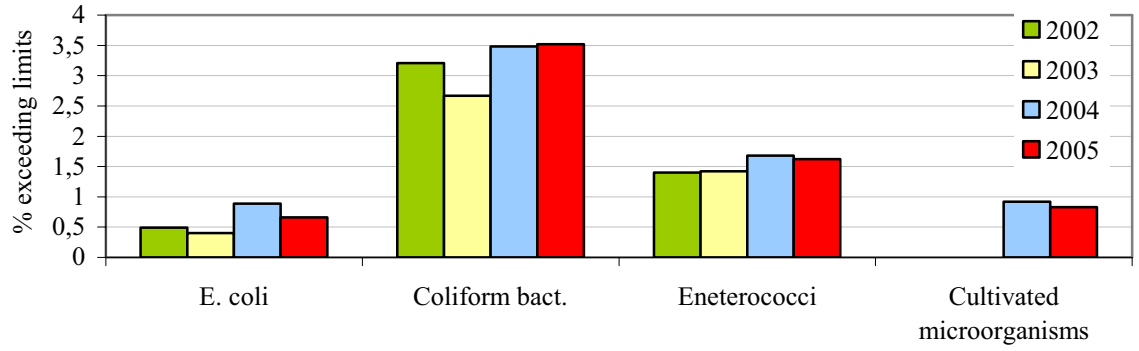
Exceeding limits in drinking water samples in accordance with the Regulation MoH SR No. 151/2004 Coll. on demands on drinking water and drinking water control

Year	2003	2004	2005
Share of drinking water samples that do not meet the NMH and MHRR limit.	-	2.03 %	2.10 %
Share of drinking water quality indicators analyses that do not meet NMH and MHRR	0.09 %	0.54 %	0.55 %
Share of drinking water samples that do not meet the MH, NMH, MHRR, and IH limit.	10.36 %	22.56 %	19.29 %
Share of drinking water indicator analyses that do not meet the MH, NMH, MHRR, and IH limits, pursuant to STN 75 711.	0.71 %	1.48 %	1.15 %

Source: WRI

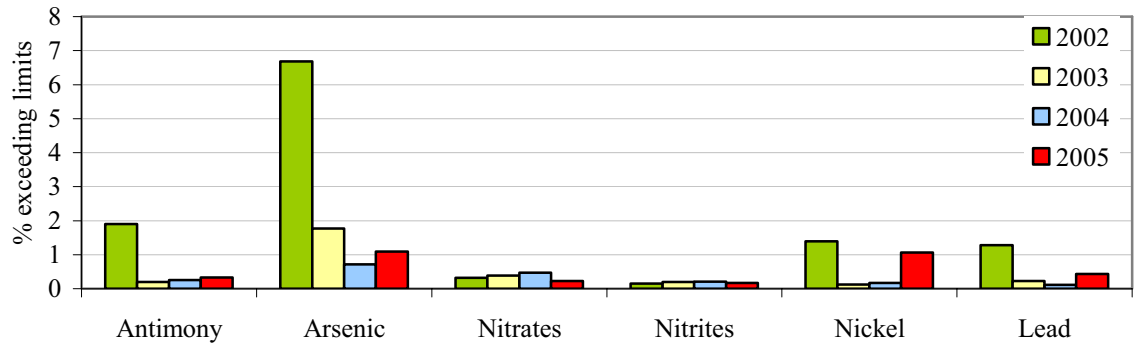
IH – indicative values, MH - threshold values, NMH - maximum threshold values, MHRR – threshold values of the reference risk

Results of monitoring the microbiological and biological indicators of drinking water within Slovakia's distribution networks



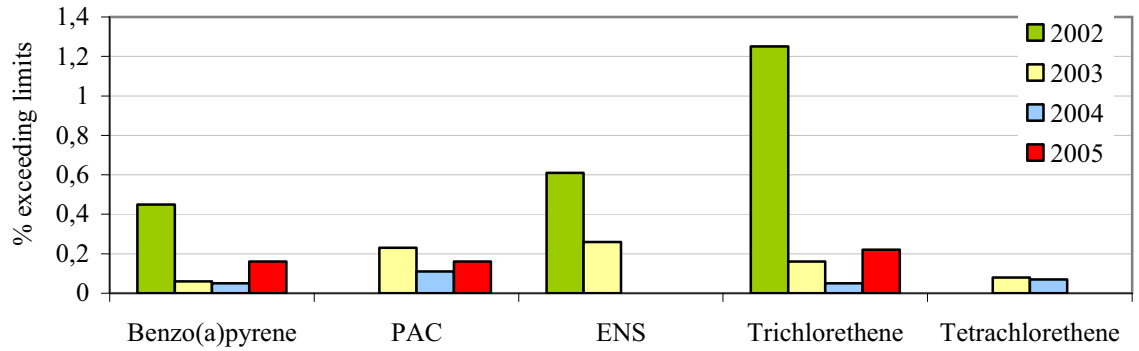
Source: WRI

Results of physical and chemical drinking water indicators monitoring within Slovakia's distribution networks - inorganic indicators



Source: WRI

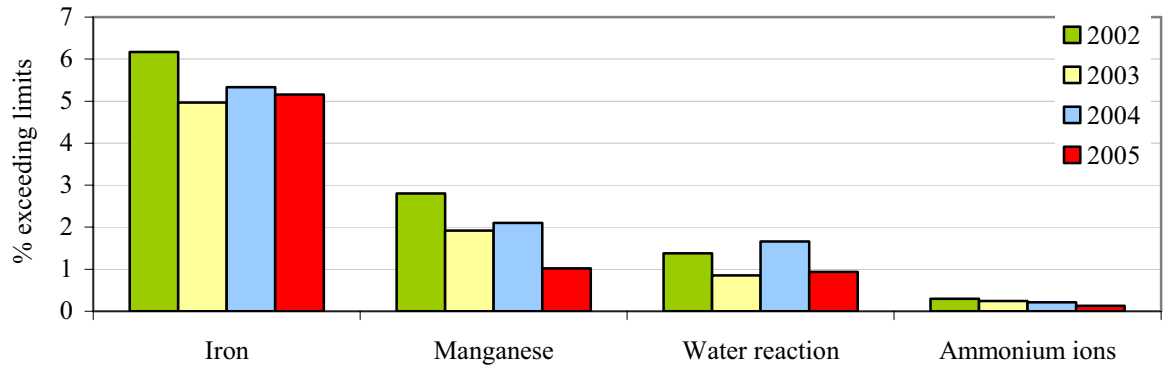
Results of physical and chemical drinking water indicators monitoring within Slovakia's distribution networks - organic indicators



Source: WRI

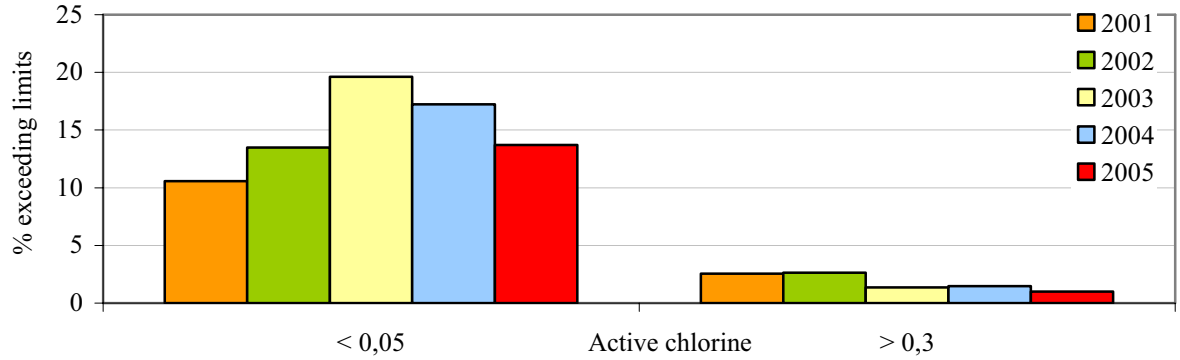
Note: PAC - Polycyclic aromatic carbohydrates
ENS - Non-polar extractable substances

Results of physical and chemical drinking water indicators monitoring within Slovakia's distribution networks - indicators that cannot adversely affect drinking water sensorial quality



Source: WRI

Results of monitoring for the presence of disinfection agents and their by-products in drinking water within Slovakia's distribution networks



Source: WRI

The purpose of this law is to establish the principles ***of protection and rational exploitation of mineral resources,*** *especially by carrying out geological researches, openings, preparation and breaking of mineral deposits, enrichment and refining of minerals, performed in relation with their extraction, as well as providing for security of operations and environment protections during these operations.*

§ 1 of the Act on Protection and Exploitation of the Mineral Resources No. 44/1988 Coll. (Mining Act) as subsequently amended

• ROCKS

Geological environmental factors

Partial Monitoring System - Geological factors (PMS - GF) as part of environmental monitoring in Slovakia, is focused mainly on so-called geological hazards or harmful natural or anthropogenic geological processes that threaten the natural environment and eventually the humans.

PMS - GF consists of 13 independent sub-systems:

01: Landslides and other slope deformation
02: Erosion processes
03: Weathering processes
04: Volume unstable soils
05: Influence of mineral exploitation upon environment
06: Change of anthropogenic sediments
07: Stability of massifs underlying historic objects
08: Covered anthropogenic sediments
09: Tectonic and seismic activity of the territory
10: Monitoring of snow pack quality
11: Monitoring of seismic phenomena in Slovakia
12: Monitoring of stream sediments
13: Monitoring of the volume activity of Radon in the geological environment

Summary of the major outcomes from the monitoring activities in 2005:

Landslides and other slope deformities belong to the most prevalent and socially challenging geo-dynamic phenomena. In 2005, monitoring activities were carried out at 22 sites. Primary measurements

are saved in a database that is part of a detailed information system. As of December 2005, the database contained more than 900 000 entries from monitoring activities.

In 2005, automated level measuring devices with online connected interfaces were installed at socially significant sliding sites of **Veľká Čausa and Okoličné**. This is an important shift to a higher level of monitoring in terms of regime monitoring and direct implementation of its outcomes. The devices were installed at new, specifically equipped hydro-geological wells, in order to reach the maximum quality of monitoring. We suppose that after checking the devices‘ functionality, toward the end of 2006, it will be possible to set the limit levels of ground water depth in the most objective manner, as well as the level's rising speed, which will initialize sending alarm signals.

Greatest increment in **erosion processes**’ area and length was recorded at the Plaveč site, located in the flysh rocks of the Spiš and Šariš ridges. Over the last 43 years, area of erosion furrows at this site increased by 58 % (1.3 % per year) and grew in length by 11 % (0.25 % per year).

In 2005, we focused our monitoring on 10 sites within the sub-system called 07: **Stability of massifs underlying historic objects**. Most important movements were recorded near Perúnova rock at the Spiš castle. Over the last year there was a gradual closing up followed by a subsequent re-opening of the rift, with the movement amplitude of 0.27 mm. Since the Summer of 1992, the rift opened by 5.034 mm.

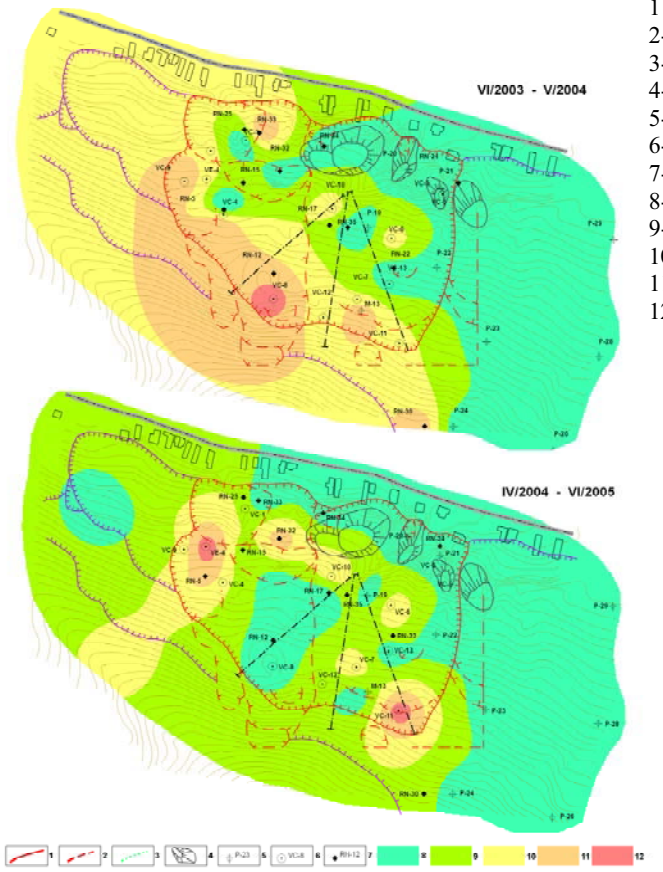
Vertical surface movements together with movements alongside the furrows, as well as seismic activity of the territory, were monitored within the **Tectonic and Seismic Activity of Territory** subsystem. An on-going registration of **seismic phenomena** in 2005 was carried out at **12 seismic stations**. All of the stations are registered in the International Seismological Centre, ISC, in Great Britain. 78 earthquakes were localised with the epicentre in the focal area of the Slovak Republic. 1 earthquake was recorded on the macro-seismic scale in Slovakia, in the Komárno focal zone.

Snowcap quality monitoring has been carried out since 1976. After the snow melts away, the samples are homogenised and subsequently analysed for the following association of elements: Na, K, Mg, Ca, NH_4, Sr, Al, Zn, Cu, Pb, Fe, Mn, Cl, F, NO_3, SO_4, HCO_3. Overall snow mineralisation in the Winter of 2004/2005 was between 2.68 to 23.07 mg/l. Values below 3 mg/l were measured at the sites of ***Banský Studenec and Chopok – Srdiečko***, while the maximum values were recorded at ***Vojany*** - beyond 20 mg/l, showing an apparent anthropogenic impact.

Chemical monitoring of alluvial sediments showed that exceeding the C group limit values, which induced very heavy contamination, was in 2005 recorded in the watercourses of Štiavnica (Pb), Hnilec (As), and Nitra (Hg).

Monitoring of the volume Radon activity was done in 2005 at five sites that showed medium to high Radon risk. Long winter season and frequent rainfalls increased soil humidity and consequently the Radon transfer within rocks. As a consequence of the mentioned fact, volume Radon activity monitoring activities showed higher values than in the previous years.

Complex summary of monitoring outcomes from the sliding site of Veľká Čausa for 2003 through 2005



1 - demarcation of active landslide forms,
2- demarcation of potential and stabilised landslides,
3-local landslides and tears,
4-displaced blocks of the volcanic rock,
5-geodetic network points,
6- inclinometer and piezometer wells,
7- monitoring of surface residual tensions,
8- stable condition of parts of territory,
9-signals of the landslide movement activity,
10-slightly active state,
11-active state,
12-highly active state,

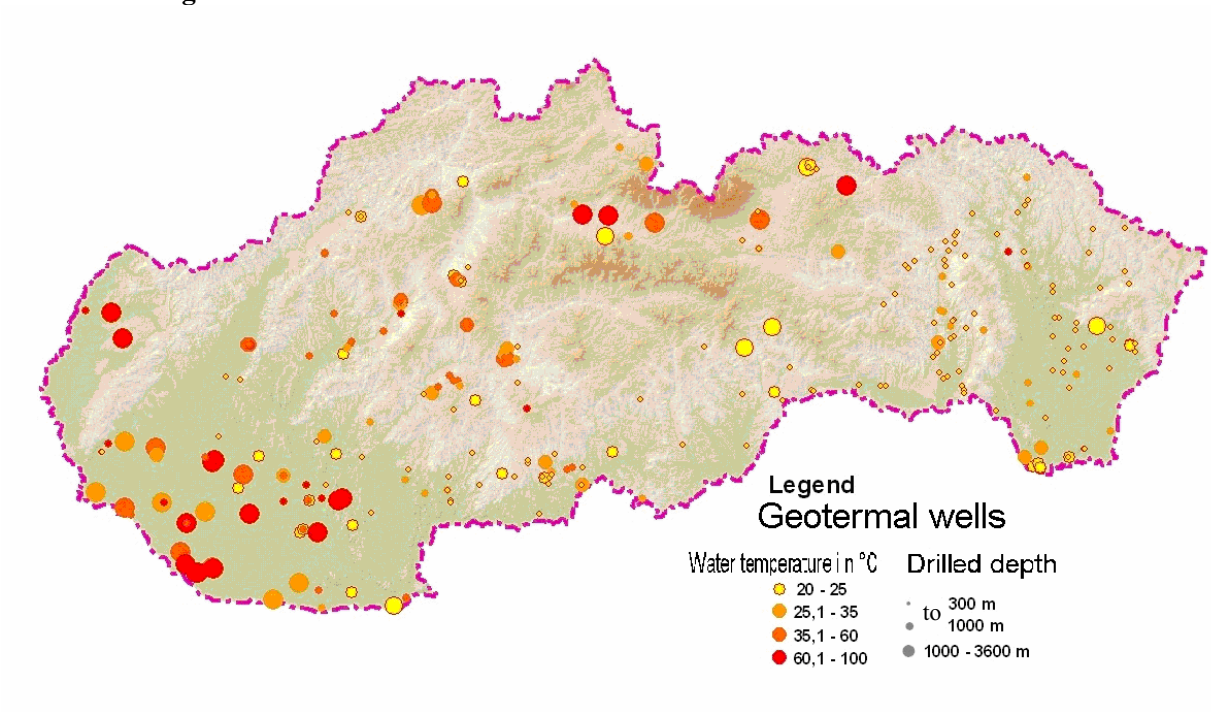
Source: SGI DS

Geothermal energy

Geothermal energy represents a significant, thermo-energetic potential of Slovakia. At present, there are 26 designated hydro-thermal areas in Slovakia, taking up 27 % of the state's territory. Rocks that function as thermal water collectors outside the spring areas are found in the depth of 200-500 m and contain geothermal water with the temperature of 20 – 150 ^{o}C.

Summary **thermo-energetic potential of geothermal water** of all prospective areas represents 5 538 MW_t.

Distribution of geothermal wells in Slovakia and their thermal characteristics



Source: SGI DS

Register of geological mapping

The registers are processed in form of typical registers on records sheets and maps. Individual registers are kept also inside a computer database and the geolographical information system.

Registers of geological mapping (as of December 31, 2005)

Registers of	Accumulation in 2005	Total number
surveyed territories	30	428
surveyed territories drafts	29	359
landslides	2	11 393
wells	6 094	732 956
hydro-geological wells	158	22 795
landfills	6	8 318
map drawing and purpose mapping	182	9 368
geophysical mapping	374	3 681
abandoned mining works	45	16 517

Source: SGI DS

Abandoned mining works

Pursuant to **Act No. 44/1988 Coll. on protection and exploitation of mineral deposits (Mining Act),** as amended, MoE SR also ensures searching for abandoned mining works. The State Geological Institute of Dionyz Stur in Bratislava was commissioned to maintain the Register.

Abandoned mining works as of December 31, 2005

Type of abandoned mine	Number
Mining shaft	4870
Pit (hole)	506
Chute	63
Cut, excavation	88
Pingo	3 987
Pingo field	109
Pingo draw	128
Dump	6 124
Old randing	205
Sink mark	292
Placer	20
Tailings dump	10
Other	115
Total	**16 517**

Source: SGI DS

Survey territories

Under the geology legislation and pursuant to the GS SR status - the GEOFOND department keeps the register of survey areas for selected geological activities. In 2005, there were 30 survey areas and 29 registered proposals to designate a survey area. As of December 31, 2005, there were 100 recognised areas.

Overview of deposits in Slovakia

Energy deposits (state to the date 31st December 2005)

Raw material	Number of deposits included into balance	Number of free balance deposits	Number of deposits for mining in 2005	Unit	Balance deposits free	Geological deposits
Anthracite	1	1	0	thous. t	2 008	8 006
Bitumen sediments	1	1	0	thous. t	9 780	10 797
Brown coal	12	7	4	thous. t	180 483	536 088
Flammable natural gas – gasoline gas	8	6	4	thous. t	207	405
Lignite	8	3	1	thous. t	112 264	619 882
Non-resinous gases	1	0	0	mil. m^3	0	6 360
Underground stores of natural gas	8	1	2	mil. m^3	25	2 450
Crude oil non-paraffinic	3	3	1	thous. t	1 632	3 422
Crude oil - semi-paraffinic	8	4	4	thous. t	159	6 494
Uranium ores	2	1	0	thous. t	1 148	2 861
Natural gas	39	25	15	mil. m^3	9 110	27 545
Total	**91**	**52**	**31**			

Source: SGI DS

Ore deposits (state to the date 31st December 2005)

Type of ore	Number of deposits included into balance	Number of free balance deposits	Number of deposits for mining in 2005	Unit	Balance deposits free	Geological deposits
Sb ores	9	1	0	thous. t	85	3 344
Complex Fe ores	9	2	0	thous. t	5 806	60 057
Mn ores	2	0	0	thous. t	0	11 009
Cu ores	15	0	0	thous. t	0	49 336
Molybdenum ores	2	0	0	thous. t	0	131 855
Nickel and cobalt ores	1	0	0	thous. t	0	17 000
Hg ores	4	0	0	thous. t	0	3 311
Other ores	1	0	0	thous. t	0	73
Poly-metallic ores	8	1	0	thous. t	1 623	26 459
Wolfram ores	2	0	0	thous. t	0	10 286
Precious soils	1	0	0	thous. t	0	8
Gold and silver ores	12	6	1	thous. t	3 292	13 202
Fe ores	4	2	1	thous. t	21 974	30 273
Total	**70**	**12**	**2**			

Source: SGI DS

Non-metallics deposits (state to the date 31st December 2005)

Raw material	Number of deposits included into balance	Number of free balance deposits	Number of deposits for mining in 2005	Unit	Balance deposits free	Geological deposits
Anhydride	6	5	1	thous. t	646 846	1 059 599
Asbestos and aspestos rock	4	1	1	thous. t	5 022	28 216
Baryte	4	0	0	thous. t	0	1 732
Bentonite	21	15	5	thous. t	1 031 071	1 044 351
Cast basalt	4	4	2	thous. t	23 085	40 080
Decorative rock	23	20	1	thous. m^3	22 240	27 798
Diatomite	3	2	0	thous. t	6 556	8 436
Dolomite	20	20	8	thous. t	610 344	633 677
Precious stones	1	1	0	ct	1 207 812	2 518 510
Graphite	1	0	0	thous. t	0	294
Halloysite	1	0	0	thous. t	0	2 249
Rock salt	4	4	1	thous. t	840 644	1 351 626
Kaolin	14	13	3	thous. t	54 696	59 978
Ceramic clays	37	34	5	thous. t	271 468	346 059
Quartz	7	7	0	thous. t	311	328
Quartzite	15	13	1	thous. t	18 357	26 956
Magnesite	10	6	3	thous. t	753 909	1 134 034
Talc	6	3	1	thous. t	93 664	242 228
Mineralized I - Br waters	2	1	0	thous. t	3 658	3 658
Pearl stone	5	5	1	thous. t	30 296	30 616
Pyrite	3	0	0	thous. t	0	18 771
Gypsum	6	5	2	thous. t	62 792	93 552
Sialitic raw material	5	5	3	thous. t	83 302	96 665
Glass sands	2	2	1	thous. t	53 289	53 289
Marl	8	7	2	thous. t	167 553	169 805

Mica	1	1	0	thous. t	14 073	14 073
Building rock	139	136	76	thous. m^3	464 608	761 456
Gravel sands and sands	29	27	21	thous. m^3	185 530	210 566
Brick clay	42	39	12	thous. m^3	113 192	138 061
Technically usable mineral crystals	3	1	0	thous. t	253	69 743
Limestone – unspecified	31	28	13	thous. t	1 916 861	2 264 717
High-content limestone	10	10	4	thous. t	3 202 636	3 366 558
Zeolite	7	7	2	thous. t	103 250	111 474
Foundry sands	16	16	1	thous. t	730 997	946 033
Refractory clays	9	6	0	thous. t	3 106	5 490
Feldspars	6	6	0	thous. t	10 402	11 640
Total	**505**	**450**	**170**			

Source: SGI DS

Classification of mineral deposits by state of extraction (2005)

Extraction symbol (ZV)	Characteristics	Number of deposits
1	*Deposits with developed extraction activity* include exclusive mineral deposits sufficiently open and technically apt for extraction of industrial deposit.	**205**
2	*Deposits with fading extraction activity* include extraction mineral deposits where extraction activity will cease in a near future (within 10 years)	**40**
3	*Deposits before completion* include exclusive mineral deposits with documented deposits that give basis to one of the construction phases (starting with the projection phase)	**24**
4	*Deposits with ceased extraction* include exclusive mineral deposits with definitely or temporarily stopped extraction activity.	**116**
5	*Non-extracted deposits* include documented exclusive mineral deposits soon **to be** constructed and extracted.	**47**
6	*Non-extracted deposits* include documented exclusive mineral deposits **with no plans** for their extraction.	**220**
7	*Surveyed deposits* include deposits of exclusive and non-exclusive minerals with various degree of mapping.	**15**

Source: SGI DS

♦ Ground water volumes

Ground waters deposits in the SR (state to the date 31st December 2005)

Category	A	B	C	Total
Efficient deposits of the ground waters (l.s-1)	-	88.56	2 714.68	2 803.24
Efficient amounts of the ground waters (l.s-1)	-	-	9 299.93	9 299.93

Source: SGI DS

Legend:
C calculated on the basis of assessment of the existing hydrogeological mapping
B calculated on the basis of hydrogeological mapping with long-term extraction test
A calculated on the basis of hydrogeological mapping with semi-operational test

Geological activities funded from the state budget

Summary of geological activities carried out in 2005 from the state budget funds

Surveyed area	Task	Objective
Research and development	Basic hydro-geological maps of selected Slovak regions	Production of basic hydro-geological maps in the scale of 1: 50 000 from 11 regions with captions
	Thermal and pressure changes in the Earth's crust of the West Carpathian in the geological past, and their probable repeated pattern in the near and distant future	Defining the type of crust, its nature, composition and evolution (age) in the West Carpathian territory Study of the paleo-climatic conditions in the area, based on the paleo-ontological information and the lithological trend in the rock complexes.
Nuclear fuel	Assessment of geological activities with the U ore in selected areas of Slovakia	Processing the results of research and survey of the uranium ore in geological formations of the West Carpathians, complex revision of written and graphic documentation from these deposits.
Energy other than electricity	Regional hydro-geo-thermal assessment of the Humenné ridge	Assessment of the geothermal potential of the Humenné ridge and its extraction potential.
	Regional assessment of the Topoľčany bay	Assessment of the geo-thermal potential of the Topoľčany bay
Extraction of minerals	Auriferous structures in the crystalline metamorphic rocks of the south-western Slovak Rudohorie ridge	Determination of the magnitude and distribution of auriferous structures, determination of the basic gold mineralisation parameters.
	Ore clusters at the border of the crystalline rocks and the central Slovakia neo-volcanic formations	Search for ore clusters at the border of crystalline shales and granitoid forms with sequences of central Slovakian neovolcanic rocks, and determine their prognostic significance in terms of the revision of primary and secondary, mostly ore accumulations.
	Searching for formations containing precious ores, near the Hodruša Svetozár deposit	Implementation of geologic activities to verify the Au /Ag, Pb, Cu ore deposit's trend in unmapped areas of the Štiavnicko-hodrušský ore-mining territory, and revision of 500 thous. tons of economically extractable stores of the quality of 8 g/t Au.
Reduction in pollution	Monitoring of environmental loads' impacts on geological environmental factors, in selected West Carpathian regions	Monitoring of environmental loads' impacts on geological environmental factors, in selected West Carpathian areas.
	Implementation of the globe's remote monitoring to monitor environmental loads for geological environmental factors in selected regions	Use of the globe's remote monitoring to assess the interaction of selected environmental loads with geological factors in a designated territory in Slovakia.
Nature and landscape protection	Evaluation of the effectiveness of surveys and landslide repair in various geological structures of Slovakia	Evaluation of the effectiveness of implemented surveys and proposed repair activities in various geological structures of Slovakia prone to landslides.
	Atlas of slope stability of Slovakia in the scale of 1: 50 000	Stable regionalisation of landslides of Slovakia and definition of basic geological fault types.
	Kremnica - securing the land sink at the Štefánik square	Securing and elimination of the abandoned mining work and a created land sink at the square in Kremnica.

Environmental protection	Building the geo-park of Banská Štiavnica	Preserving the unique geological importance phenomena, uniqueness for scientific research focused on environmental education.
	Uses of magneto-telluric measurements to interpret depth composition and verify geo-physical (gravitational) transects of the eastern part of the West Carpathian mountains	Re-evaluation of the geological composition of Slovakia, examination of the tectonic composition and characteristics of the aquifer of the inner-Carpathian tertiary planes, interpretation of the depth composition and the aquifer of the Alpine formations, regional faults, and deformation zones.
	Set of regional maps of environmental geo-factors of the Myjavská hills and White Carpathians regions	Maps created in the scale of 1: 50 000 that evaluate major environmental factors, state of pollution, and distribution of elements in individual components of environment (rocks, water, soil, alluvial sediments), and natural radioactivity of rocks and water.
	Hydro-geological map of the southern SGR part	Objective of the project is to create hydro-geological and hydro-geochemical basic map of the region of Spiš - Gemer rudohorie, and draft directives.
	Engineering geology atlas of rocks in Slovakia	Creation and publishing of the engineering geology atlas of Slovakia. The atlas will include major engineering geology characteristics of most dominant rock types in Slovakia.
	Set of environmental geological factors Ipeľ region (IPREG)	Maps of the Ipeľ region created in the scale of 1: 50 000 that evaluate major environmental factors, especially the state of pollution, and distribution of 36 elements in individual components of environment (rocks, water, soil, alluvial sediments), and natural radioactivity of rocks and water.
	Set of geological environmental factors maps of the Lučenská and Rimavský basins	Maps created in the scale of 1: 50 000 that evaluate major environmental factors, state of pollution, and distribution of 36 elements in individual components of environment (rocks, water, soil, alluvial sediments), and natural radioactivity of rocks and water.
	Set of geological environmental factors maps of the Záhorská lowland region	Maps created in the scale of 1: 50 000 that evaluate major environmental factors, state of pollution, and distribution of 36 elements in individual components of environment (rocks, water, soil, alluvial sediments), and natural radioactivity of rocks and water.
	Engineering geological mapping of slope deformities in the most threatened areas of the flysch zone in the scale of 1: 10 000	Drafting geological purpose maps focused on slide and flood risks of the most vulnerable territories of the flysch zone, as well as proposals for necessary measures for their elimination.
Water supply	Hg Tracking and localisation survey of the Veľká Fatra and Law Tatras Mesozoic formation, between Ploská and Donovaly	Objective is to assess hydro-geological and hydro-geochemical conditions of the territory, assess the natural and available ground water volumes, and set the conditions for quantitative and qualitative ground water protection.
	Neo-volcanic formations of the northern slopes of the Štiavnické hills	Objective is to assess hydro-geological and hydro-geochemical conditions of the territory, assess the natural and available ground water volumes, and set the conditions for quantitative and qualitative ground water protection.
	Hg tracking and location survey of the eastern part of the PQ 115 hydro-geological region – Palaeogene of the Hornád basin and parts of the Poprad basin	Objective is to assess hydro-geological and hydro-geochemical conditions of the territory, assess the natural and available ground water volumes, and set the conditions for quantitative and qualitative ground water protection.
Public health	Trenčianske Teplice - calculations of mineral water volumes	Objective is to calculate natural and available volumes of mineral ground water in the Trenčianske Teplice category C hydro-geological structure.

Source: MoE SR

The terms sustainable exploitation of the arable land and farming the farmland mean exploitation and protection of the properties and functions of the soil by the means and to the extent, which would keep its biological diversity, fertility, restoration ability and potential to perform all functions.

§ 2 letter e/ of the Act on Protection and Use of Farmland No. 220/2004 Coll., including the change of Act on Integrated Pollution Prevention and Control No. 245/2003 Coll., and on change and amendment of some laws

• SOIL

Land use

♦ Land Use on the basis of the Land Register's data

Total size of the Slovak Republic is 4 903 467 ha. In 2005, the share of agricultural land was 49.62 % of total land size, while the share of forestland was 40.89 %, and the share of non-agricultural and non-forest land was 9.48 %.

Land Use categories (state to the date 31st December 2005)

Land category	Area (ha)	% of total area
Agricultural land	2 432 979	49.62
Forest land	2 005 234	40.89
Water areas	93 381	1.91
Build-up land	226 257	4.61
Other land	145 616	2.97
Total area	4 903 467	100.00

Source: IGCC SR

♦ Changes to the landscape cover evaluated by comparing satellite images

Application of the CLC (Corine Land Cover) data layers from 1990 and 2000 showed changes in 1 612 km^2 of Slovakia's land cover. Major changes included:

in the area of forest and semi-nature land:

- change of 580.3 km^2 of forestland to woodland shrub,
- change of 529.7 km^2 of woodland shrub to forestland,
- 186 km^2 of agricultural grasslands, natural grasslands and heterogeneous agricultural areas have become woodland shrub,

in agricultural landscape:

- increase to the area of the mosaic pattern of fields, grasslands, and permanent cultures by 165.5 km^2, at the expense of the arable land especially (132.1 km^2),
- reduction of arable land by 56.9 km^2, beneficial to grasslands especially (46.2 km^2),
- changes of vineyards and orchards to arable land (49.6 km^2),

in urbanised landscape:

- increase in the area of residential, industrial, and recreational zones, as well as roads by 44.6 km^2 and water bodies with inflow canals by 64.2 km^2.

Soil properties

Information on state, trend in land properties and their degradation may be obtained from the Partial Monitoring System - Soil (PMS-S) carried out by the Soil Science and Conservation Research Institute.

♦ Chemical properties of soil

The following tables show changes to soil reaction values, volumes of acceptable phosphorus and potassium, and humus in the A-horizon of agricultural land over three PMS-S cycles.

Trend in soil reaction (pH/H_2O) in the A-horizon of soil in Slovakia, based on the comparison of outcomes from three PMS-S cycles

Main soil unit	1993	1997	2002
Mollic Fluvisols AL	7.29	7.24	7.03
Fluvisols AL	7.13	6.95	-
Chernozems AL	7.28	7.31	-
Haplic Luvisols AL	6.71	6.85	-
Planosols AL	6.66	6.70	-
Planosols PG	6.31	6.24	-
Rendzic Leptosols AL	7.27	7.25	7.54
Rendzic Leptosols PG	7.17	7.18	6.57
Regosols AL	6.68	6.54	6.95
Cambisols AL	6.56	6.42	6.18
Cambisols PG	5.61	5.56	5.29
Solonchaks and Solonetz PG	8.29	7.88	8.45
Podzols PG	4.21	3.93	3.88

AL – Arable Land, PG – Permanent Grassland

Source: SSCRI

Trend in the amount of acceptable P in the A-horizon of soil in Slovakia, based on the comparison of outcomes from three PMS-S cycles ($mg.kg^{-1}$)

Main soil unit	1993	1997	2002
Mollic Fluvisols	101.50	94.40	61.70
Andosols	44.62	58.25	57.22
Regosols	145.76	77.30	140.94
Rendzic Leptosols	95.60	62.80	64.94
Eutric Cambisols	48.78	66.10	30.62
Dystric Cambisols	106.50	98.90	47.50
Solonchaks and Solonetz	39.20	32.30	22.32
Podzols	46.12	27.30	25.11

Source: SSCRI

Trend in the amount of acceptable K in the A-horizon of soil in Slovakia, based on the comparison of outcomes from three PMS-S cycles (mg.kg^{-1})

Main soil unit	1993	1997	2002
Mollic Fluvisols	251.20	198.40	238.45
Andosols	153.00	109.00	101.00
Regosols	232.75	103.60	155.13
Rendzic Leptosols	240.00	152.40	188.16
Eutric Cambisols	193.75	211.60	173.14
Dystric Cambisols	212.37	118.50	175.13
Solonchaks and Solonetz	179.66	105.30	116.52
Podzols	144.33	103.10	101.65

Source: SSCRI

Trend in the amount of humus in the A-horizon of soil in Slovakia, based on the comparison of outcomes from three PMS-S cycles (%)

Main soil unit	1993	1997	2002
Chernozems AL	2.74	2.17	-
Mollic Fluvisols AL	3.69	3.14	3.74
Fluvisols AL	2.72	2.26	-
Haplic Luvisols AL	2.07	1.71	-
Planosols and Luvisols AL	2.07	1.69	-
Planosols and Luvisols PG	3.85	3.47	-
Cambisols on vulcanite PG	5.00	3.62	5.69
Cambisols on vulcanite AL	3.65	3.17	4.52
Stagni-Cambisols PG	4.55	3.52	4.98
Stagni-Cambisols AL	2.86	2.26	3.17
Cambisols on acid substrates and slates PG	6.17	4.72	6.76
Cambisols on acid substrates and slates AL	3.09	2.41	3.71
Cambisols on carbonates substrates PG	6.47	5.00	6.72
Cambisols on carbonates substrates AL	2.98	2.52	3.40
Cambisols PG	5.55	4.22	6.04
Cambisols AL	3.15	2.59	3.70
Regosols AL	1.76	1.57	2.05
Podzols, Sceletic Leptosols, Leptosols PG	18.79	20.00	24.79
Solonchaks and Solonetz PG	2.40	2.02	2.83
Rendzic Leptosols AL	3.05	2.62	2.76
Rendzic Leptosols PG	6.03	5.34	7.59

AL – Arable Land, PG – Permanent Grassland

Source: SSCRI

- **Physical properties of soil**

The table shows changes to values of total porosity in the A-horizon of agricultural land during three PMS-S cycles.

Trend in overall porosity in the A-horizon of soil in Slovakia, based on the comparison of outcomes from three PMS-S cycles

Main soil unit	Volume %								
	Light soils			Medium heavy soils			Heavy soils		
	1993	1997	2002	1993	1997	2002	1993	1997	2002
Mollic Fluvisols	-	-	-	46.42	49.52	49.79	53.45	48.8	48.57
Rendzic Leptosols	-	-	-	53.71	41.76	46.79	46.66	50.29	55.55
Regosols	44.64	44.31	45.90	-	-	-	-	-	-
Cambisols	32.70	45.50	-	40.20	48.30	50.92	51.90	51.60	53.24

Source: SSCRI

Soil degradation

Soil contamination by heavy metals

Results from the III. cycle of PMS-S with samples extracted in 2002 showed that the content of the majority of risk substances in selected agricultural land of Slovakia are below the limit, especially being the case of arsenic, chromium, copper, nickel, and zinc. In case of cadmium, excessive limit values were recorded only in soils situated in higher altitudes, podzols, andosols, which might relate to remote transfer of emissions (Kobza and coll., 2002).

Most recent average distribution of risk elements ($mg.kg^{-1}$) in the A-horizon of some agricultural land types in Slovakia (III. monitoring cycle of PMS-S)

Main soil unit	Risk elements in 2 $ml.dm^{-3}$ of HNO_3 leachate						
	As	Cd	Cr	Cu	Ni	Pb	Zn
Podzols and Sceletic Leptosols	3.55	0.48	2.24	4.52	0.85	63.61	12.94
Andosols	1.42	0.51	3.32	11.00	1.01	49.72	33.44
Regosols	0.65	0.17	3.31	8.38	1.84	5.31	9.34
Solonchaks and Solonetz	1.03	0.20	4.24	5.84	4.33	11.71	9.49
Cambisols	1.89	0.25	3.08	10.20	3.07	18.88	11.92
Rendzic Leptosols	0.69	0.38	3.50	9.10	5.15	20.40	21.55
Mollic Fluvisols	1.45	0.22	3.55	13.05	5.95	16.10	15.55

Source: SSCRI

In the III. monitoring cycle covering 274 agricultural hunts with the size of 15 802 ha, no excessive limit pollutants (PAU, PCB, chlorinated hydrocarbons) were found in the monitored hunts.

♦ Physical degradation

Erosion and soil compaction belong among the major phenomena of physical degradation in Slovakia.

Soil erosion

Water erosion is prevalent in Slovakia.

Agricultural land endangered by erosion in the SR

Erosion categories	Water erosion		Wind erosion	
	Land area in ha	% from Agricultural Land	Land area in ha	% from Agricultural Land
No erosion or slightly	1 274 857	52.3	2 286 822	93.8
Medium	217 487	9.0	73 186	3.0
Strong	368 704	15.1	45 753	1.9
Extremely strong	575 831	23.6	31 118	1.3
Total	2 436 879	100.0	2 436 879	100.0

Source: SSCRI

Application of the sewage sludge and bottom sediments into the soil

From the available data in 2005, production of sludge in that year resulted in 56 360 tons of dry matter. Of this volume, 39 120 tons (64.4 %) were used, and 8 710 tons (15.5 %) were landfilled, 5 870 tons of sludge dry matter were directly applied into agricultural land, 28 910 tons of sludge dry matter was used for compost production, while 4 340 tons of sludge was used for land purposes through different ways (recultivation, etc.).

Sewage sludge application into the soil

Year	Amount of sewage sludge (t)	Content (mg/kg dry matter)						
		Cd	Cr	Cu	Hg	Ni	Pb	Zn
2003	17 245	2.53	85.7	284	5.20	52.6	131.0	1 460
2004	12 067	1.84	115.0	276	3.12	23.9	72.6	1 130
2005	5 870	2.01	74.3	218	2.80	26.3	58.1	1 235

Source: WRI

*Everybody, while performing an activity, which could endanger, harm or destroy **plants or animals,** or their biotopes, are obliged proceed so that there is no pointless death loss or damage and destruction.*

§ 4 par. 1 of the Act No. 543/2002 Coll. on Nature and Landscape Protection as subsequently amended

• FLORA AND FAUNA

Flora

♦ Endangerment of wild-growing plant taxons

State of endangerment of the particular taxons of the plants is processed according to the current red lists (BALÁŽ, D., MARHOLD, K. & URBAN, P. EDS., 2001: **Red list of plants and animals of Slovakia**. Nature conservation n. 20 (Suppl.), 160 pp.).

State of endangerment of plant taxons in 2005

Group	Total number of taxons		Endangered (IUCN cat.)						Ed
	World (global estimation)	Slovakia	EX	CR	EN	VU	LR	DD	
Cyanophytes and Algae	50 000	3 008	-	7	80	196	-	-	-
Lower fungi	80 000	1 295	-	-	-	-	-	-	-
Higher fungi	20 000	2 469	5	7	39	49	87	90	-
Lichens	20 000	1 508	88	140	48	169	114	14	-
Bryophytes	20 000	909	26	95	104	112	85	74	2
Vascular plants	250 000	3 352	77	266	320	430	285	50	220

Source: SNC SR

Legend:
Ed – endemic species

IUCN categories of endangerment:
EX – extinct
CR – critically endangered
EN – endangered
VU – vulnerable
LR – less endangered
DD – data deficient

The basic **reason** of plants endangerment is especially **the destruction of the sites.** The most of the critically endangered flora species of the SR comes from the biotopes globally endangered in all central Europe.

Comparison of the vascular plant endangerment* in selected countries (%)

	Slovakia	Austria	Hungary	Poland	Czech Rep.
Vascular plants	26.9	39.2	19.8	12.1	43.3

Source: OECD

* Among "endangered" taxons are those taxons classified under categories: CR, EN, and VU under IUCN.

- **Protection of plant taxons**

Protection of plant taxons is in the presence regulated by the **Decree of MoE SR No. 24/2003 Coll.** to the *Act on Nature and Landscape Protection No. 543/2002 Coll.* Number of the **state protected taxons** is now **1 368** (vascular plants – 1 208; bryophytes – 46; higher fungi – 85; lichens – 21; algae – 8). Nowadays, there are legislatively protected even the **species of the European importance** of the *92/43/EEC Council Directive on the conservation of natural habitats and of wild fauna and flora,* which does not occur in the SR area. From the total number of 1 368 protected taxons there are **850 taxons** occurring in Slovakia (vascular plants – 713, bryophytes – 23, higher fungi – 85, lichens – 21, algae – 8).

The basic criterion of the plant taxons protection is, except endangerment, also their listing in the lists of proper **international conventions** and **the environmental law of EU.**

Wild-growing plant taxons in Slovakia protected by international conventions and EU regulations (2005)

	Cyanophytes and Algae	Fungi	Lichens	Bryophytes	Vascular plants
In attachment II of **Habitats Directive**	-	-	-	9	328
In attachment IV of **Habitats Directive**	-	-	-	-	530
In attachment I and II of **CITES**	-	-	-	-	110
In attachment I of **Bern Convention**	-	-	-	8	34

Source: SNC SR

Processed and realized rescue programmes

Rescue programmes (RP)	Vascular plants species
Processed in 2005	There were processed RP for 2 critically endangered species in 2005: *Carex pulicaris, Glaux maritima*
Realized in 2005	There were realized RP for the following species in 2005: *Spiranthes spiralis, Liparis loeselii, Herminium monorchis, Peucedanum arenarium, Artemisia austriaca, Groenlandia densa, Lathyrus transsilvanicus, Ferula sadleriana, Onosma tornense, Astragalus asper, Fritillaria meleagris, Alkana tinctoria, Colchicum arenarium, Dactylorhiza ochroleuca, Orchis coriophora subsp. coriophora, Ophrys holubyana, Drosera anglica, Rhynchosphora alba, Scheuchzeria palustris, Lycopodiella inundata, Pulsatilla zimmermannii, Pulsatilla pratensis subsp. flavescens, Orchis palustris, Orchis elegans, Anacamptis pyramidalis, Carex chordorhiza*

Source: SNC SR

Actual problem endangering the diversity of plant species in last years has been becoming **invasive species**. **Mapping** of invasive species in Slovakia in 2005 was done in 42 small-size protected areas, and in other 148 sites. The following species were recorded most frequently: *Falopia japonica, Impatiens parviflora, I. glandulifera, Helianthus tuberosus, Ailanthus altissima, Echinocystis lobata, Solidago canadensis, and S. gigantea.*

There was observed approximately **175 allochtonous species** of plants in Slovakia, whereof in the presence about **20** species behaves as invasive ones. **The most spread** invasive plant species in our country are *Fallopia japonica*, *Helianthus tuberosus*, *Heracleum mantegazzianum*, *Impatiens parviflora*, *Solidago canadensis*, *Fallopia sachalinensis*, *Impatiens glandulifera*, *Solidago gigantea*, *Aster novi-belgii*, *Aster lanceolatus*, *Robinia pseudoacacia*, *Ailanthus altissima, Rudbeckia laciniata*.

Fauna

♦ Endangerment of wild animals

State of endangerment of the particular animal taxons is processed similarly as the endangerment of the plants according to the current red lists. State of endangerment of the molluscs (ŠTEFFEK, 2005) and Orthoptera (Gavlas & Krištín, 2005) draws on the updated red lists compiled in 2005.

State of endangerment of the particular invertebrate taxons in 2005

Taxons	Number of taxons		Categories of endangerment (IUCN)							Endangerment total	Endang. %
Group	World	SR	EX	CR	EN	VU	LR	DD	NE		
Mollusca	128 000	277	2	26	22	33	45	8	135	136	49.1
Aranea	30 000	934	16	73	90	101	97	46	-	424	45.4
Ephemers	2 000	132	-	8	17	16	-	-	-	41	31.1
Odonata	5 667	75	4	-	14	11	13	5	-	47	62.7
Orthoptera	15 000	118	-	6	7	10	20	10	-	53	44.9
Heteroptera	30 000	801	-	14	7	6	4	-	-	31	3.9
Coleoptera	350 000	6 498	2	15	128	500	81	2	-	728	11.2
Hymenoptera	250 000	5 779	-	23	59	203	16	-	-	301	5.2
Lepidoptera	100 000	3 500	6	21	15	41	17	11	-	111	3.2
Diptera	150 000	5 975	-	5	10	71	19	93	-	198	3.3

Source: SNC SR

State of endangerment of the particular vertebrate taxons in 2005

Taxons	Number of taxons		Categories of endangerment (IUCN)							Total	%
Group	World [4]	SR	EX	CR	EN	VU	LR	DD	NE		
Lampreys		4	-	4	-	-	-	-	-	4	100.0
Pisces	25 000	79	6	7	8	1	22	2	-	45[1]	57.0
Amphibians	4 950	18	-	-	3	5	10	-	-	18	100.0
Reptiles	7 970	12	-	1	-	4	6	-	-	11	91.6
Birds[2]	9 946	219	2	7	23	19	47	4	19	121	55.3 (35.5[3])
Mammals	4 763	90	2	2	6	12	27	15	4	68	75.6

Source: SNC SR

[1] taxon has two forms listed under two different categories (EX, CR)
[2] only nesting birds – of total number of 341 birds of Slovakia, only the all 219 species of nesting birds were assessed
[3] % of total number of birds 341
[4] Source: UNEP – GBO

IUCN Categories:
EX - extinct taxon
CR - critically endangered taxon
EN - endangered taxon
VU - vulnerable taxon
LR - lower risk taxon
DD - data deficient taxon
NE - non evaluated taxon

Comparison of vertebrates endangerment [1] in selected countries (%) (2002)

	Slovakia	Austria	Hungary	Poland	Czech Rep.
Invertebrates	5.2	-	> 0.9	11.7	0.4
Pisces	23.8	65.5	32.1	36.4	29.2
Amphibians	44.4	100.0	100.0	0	90.0
Reptiles	41.7	87.5	100.0	33.3	100.0
Birds	14.4	37.0	18.8	26.8	55.9
Mammals	22.2	35.4	71.1	18.1	33.3

Source: OECD

[1] "endangered" taxons include species under categories: CR, EN, and VU under IUCN

Austria) only autochthonous species; endangerment of the mammals: including EX and/or extinct species; birds: only nesting species in the area of the country; pisces: only freshwater ones, invertebrates: insecta, decapoda, mysidacea and mollusca.
Czech Rep.) data refer to autochthonous species and EX including.
Hungary) Endangerment of the mammals: protected and highly protected species; pisces: freshwater species, whereof there are 2 autochthonous species; "Endangered" pisces species including undetermined species. "Endangered" reptiles and amphibians refer to the protected and highly protected species.
Poland) mammals: only autochthonous species (from 89 species); birds: only nesting species (total number of species has ever been observed in Poland: 418); pisces: freshwater autochthonous species besides lampreys (from 78 freshwater species). invertebrates: estimation.
Slovakia) Pisces: only freshwater species

♦ Protection of animal species

Protection of animal species is regulated by the **Decree of MoE SR No. 24/2003 Coll.**, which implements the *Act on nature and landscape protection No. 543/2002 Coll.* The number of **animal taxons under state protection** has increased to **792 taxons** on the level of species and subspecies and to **12 taxons** on the level of genus.

Animal wildlife in Slovakia protected by international conventions and EU regulations (2005)

	Invertebrates	Pisces	Amphibians	Reptiles	Birds	Mammals
In annex II of **Habitats Directive**	48	24	5	1	-	22
In annex IV of **Habitats Directive**	46	1	10	8	-	28
In annex I of **Birds Directive**	-	-	-	-	112	-
In annexes I and II **of CITES**	2	-	-	-	61	6
In annexes II and III of **Bern Convention**	26	36	11	8	120	26
In annexes II and III of **Bonn Convention**	-	3	-	-	54	-
In annex of **AEWA***	-	-	-	-	122	-

* AEWA – African-Eurasian Migratory Water Bird Agreement
Source: SNC SR

Rescue programmes in 2005 were realized for the following taxons: *Rupicapra rupicapra tatrica*, *Marmota marmota*, *Lutra lutra*, *Aquila heliaca, Aquila chrysaetos*, *Aquila pomarina*, *Falco cherrug*, *Falco peregrinus*, *Otis tarda*, *Crex crex*, *Emys orbicularis* a *Paranssius apollo*.

In **breeding** and **rehabilitation stations** operated by the nature and landscape protection organizations (including ZOO Bratislava) there were **adopted** in 2005 altogether **538** injured individuals or otherwise disabled animals. Back to wild nature there were **released** altogether **281** individuals and there was spent more than 330 thous. SKK.

There was provided **the guarding** of 92 nests of 8 bird of prey species (*Aquila heliaca, Aquila chrysaetos, Aquila pomarina, Haliaeetus albicilla, Falco peregrinus, Falco vespertinus, Circus pygargus, Milvus milvus*) - information only for the organization organs of SNC SR. There were successfully **brought up** 108 nestlings, which is in average 1.2 brought up nestlings per nest and there were **spent** about 390 thous. SKK.

In term of in situ animal preservation in 2005 there were organized **transfers and restitutions** of protected and endangered animals into proper nature biotopes by nature and landscape protection organizations. There were these animals – *Emys orbicularis*, *Spermophillus citellus*, *Bison bonasus, Castor fiber, Amphibia and Pisces* and there was **spent** altogether 236 thous. SKK.

Within the **improvement of nesting and living conditions** of animals, there were realized 326 actions, while there was invested 390 thous. SKK.

In **breeding stations** operated in cooperation with the nature protection organizations there were **situated** 2 species of the protected and endangered animals (*Emys orbicularis* and *Parnassius apollo*). Into the wilderness there were **released** 17 brought up individuals with investments of altogether 35 thous. SKK.

In concern of preventing the collisions of **migrating Amphibians** with the car transport, **over 18 kilometres of barriers** in total were build in 2005, with investment of more than 130 thous. SKK.

- **Numbers and quotas for fishing and hunting game**

Also in 2005, monitoring of game stock and fish continued as the basis for coordination of hunting or fishing of the selected species in hunting and fishing territories.

To 31st March 2005, the **spring stock numbers** of all the ungulate game species were higher in comparison to the previous year. Hunting for the rare animal species is strictly regulated (for more information see the chapter Forestry/Hunting).

Spring stock of game and game hunting as of March 31, 2005 (pieces)

Species	2003		2004		2005	
	stock	hunting	stock	hunting	stock	hunting
Deer	38 030	13 064	38 264	13 118	39 738	14 030
Fallow deer	7 501	2 109	7 475	2 011	8 425	2 529
Roe deer	83 756	20 770	84 547	20 269	85 124	20 659
Wild boar	28 779	21 118	27 415	23 727	27 116	22 551
Brown hare	219 450	28 144	201 316	31 842	199 226	36 511
Grey partridge	22 594	1 042	18 622	832	17 293	484
Pheasant	204 856	115 598	180 105	116 050	181 374	143 373
Chamois	553	8	522	7	625	12
Bear	1 318	13	1 419	34	1 483	35
Wolf	973	112	1 158	86	1 165	74
Otter	304	0	315	0	343	0

Source: SO SR

Amount of the fish **caught** in the fish ponds, water dams and water flows for economic and sport purposes achieved **2 652 t** in 2005. The waters were **stocked** by **28 741 377 pieces of setting**.

Fishing for the economic and sport purposes in 2005 (t)

Fish species	2003		2004		2005	
	total	of this SFA*	total	of this SFA*	total	of this SFA*
Fish total Of these:	**2 528**	1 631	**2 783**	1 565	**2 652**	1 663
Carp	1 186	1 040	1 360	988	1 281	1 092
Trouts	743	50	878	52	800	49
Crucians	101	71	80	75	76	71
White amur	36	34	28	28	33	24
Bighead carps	10	4	8	5	12	6
Sheat fish	36	35	36	35	37	35
Maskalonge	59	56	66	60	74	67
Sand-eel	78	78	78	76	83	82
Grayling	12	12	9	8	13	7
Huchen	1	1	1	1	1	1
Breams	99	98	98	98	106	105
Torgoch	1	0	0	0	9	1
Chevins	27	27	21	21	16	16
Other fish species	139	125	120	117	111	107

*SFA – Slovak Fishing Association

Source: SO SR

*The aim of the **air quality** care is to sustain the air quality in places, where it is adequate, and to improve the air quality in other cases.*

§ 5 par. 1 of Act No. 478/2002 Coll. on Air Production, amending Act No. 401/1998 Coll. on Air Pollution Surcharges as subsequently amended (Air Act)

MAJOR CUMMULATIVE ENVIRONMENTAL PRESSURES

• CLIMATE CHANGES

In Slovakia, over the last 100 years, there has been recorded an increasing **trend in the average annual air temperature** by 1.1 °C, and reduction in annual precipitation balance by 5.6 % (south of the SR showed a reduction by more than 10 %, while the north and some sporadic northeast locations showed an increase up to 3 % over the whole century). Significant reduction in **relative air humidity** (up to 5 %) and **reduction in snowcap** almost in the whole of Slovakia were recorded. Characteristics of the potential and actual evaporation, soil humidity, global radiation and radiation balance also prove that the south of Slovakia is gradually drying up (potential evapo-transpiration rises and soil humidity decreases); however, no substantial changes were detected in solar radiation characteristics (with the exception of temporary reduction in the years 1965-1985).

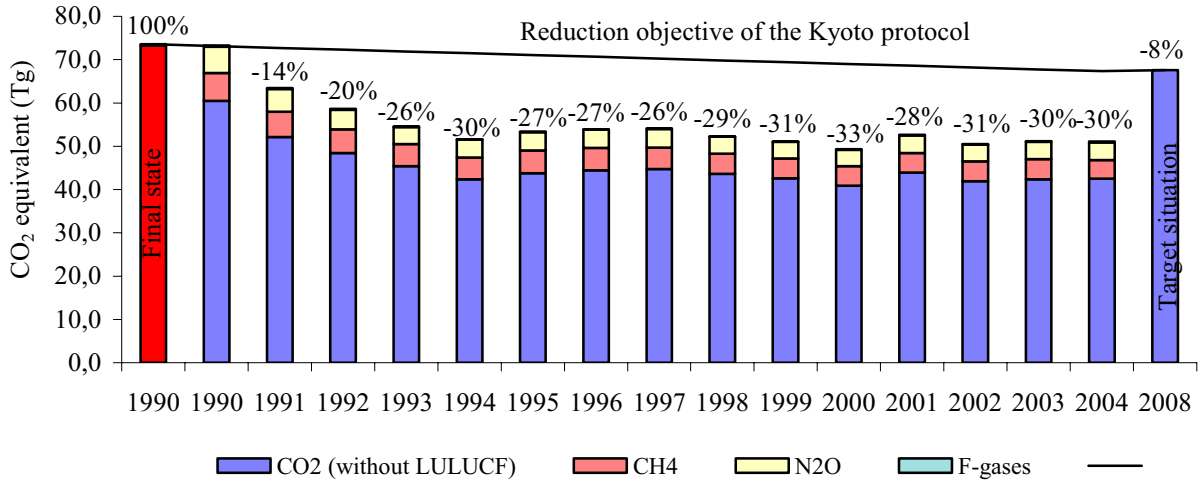
Special attention is given to characteristics of climate variability, especially **precipitation balances.** Over the last 7 years, there was a significant increase in the occurrence of extreme daily precipitation figures, which consequently produced a significant increase in local floods in various regions of Slovakia. On the other hand, mainly in the years 1989-2002, there was a more frequent occurrence of local or overall drought, which was caused mainly by long periods of relatively warm weather patterns. Especially harmful were droughts in the periods of 1990-1994, 2000, and 2002.

International obligations in the area of climate changes

At the UN Conference on Environment and Development (Rio de Janeiro, 1992) was adopted **framework Convention on Climate Change** – basic international legal instrument for protection of global climate. The convention became effective in the Slovak Republic on November 23, 1994. Slovakia accepted all obligations stemming from the Convention, including the obligation to decrease greenhouse gases emissions by the year 2000 to the level of 1990. Aggregated emissions of greenhouse

gases in 2000 (48.625 Gg CO_2 equivalent) did not exceed the level of 1990 (72.107 Gg CO_2 equivalent). Next internal goal that Slovakia set to achieve was to reach the „Toronto Objective" i.e. 20 % reduction in emissions by 2005, compared to 1988. At the conference of signatories to the UN Framework Convention on Climate Change in Kyoto, Japan, in December 1997, Slovakia bound itself to reduce the production of greenhouse gases by 8 % by 2008, compared to 1990, and to continue keep the same level until 2012. The Protocol became effective after its ratification by the Russian Federation, on February 16, 2005, which is the 90th day after its signing by at least 55 countries, including the countries listed in Annex 1, that contribute by at least 55 % to total CO_2 emissions for the year 1990 as listed in Annex B accompanying the article 25 of the Kyoto Protocol.

Assessment of anthropogenic emission of greenhouse gases under compliance with the Kyoto protocols outcomes



Source: SHMI

Balance of greenhouse gases emissions

On the basis of **greenhouse gases emissions** assessed under the IPCC methodology (Intergovernmental Panel of Climate Change) in 2004, total anthropogenic CO_2 emissions, without deducting detections in the LULUCF sector (Land use, land use change and forestry), reached the value of 42.498 Gg. Sink of carbon dioxide in forest ecosystems in 2004 was 4 230.16 Gg (appr. 2 388.48 Gg in 1990). Total CH_4 emissions in 2004 reached the value of 203.9 Gg (306.9 Gg in 1990), while total NO_2 emissions in the same year reached 13.15 Gg (19.76 Gg in 1990). Anthropogenic emissions of greenhouse gases reached their highest level in the late 80-ties, while in 2004 their levels dropped by 30 %, compared to the reference year of 1990.

Aggregated greenhouse gases emissions constitute total emissions of greenhouse gases expressed as the CO_2 equivalent, calculated through the GWP 100 (Global warming potential). In 2004, CO_2

emissions represent more than 81 %, CH_4 emissions are on the level of 9 %, while N_2O emissions contribute by approximately 9 %, and the share of the F-gases (HFC, PFC, and SF_6) is less than 1 %.

Share of individual industries on the production of greenhouse gases remains very similar to the year 1990. The area of agriculture shows the most significant difference, with the reduction in emissions by 3.1 %, compared to 1990. This change was caused mainly by a reduced use of industrial fertilizers and reduced numbers of livestock.

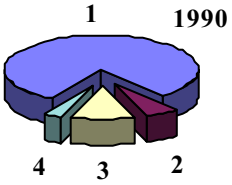
Aggregated emissions of greenhouse gases (Tg) in CO_2 equivalents

Tg (CO_2 equivalent)	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
Net CO_2	58.1	48.6	44.2	41.1	39.1	41.1	42.0	43.3	41.7	41.0	38.5	38.7	36.7	37.5	38.2
CO_2*	60.5	52.1	48.4	45.4	42.4	43.8	44.4	44.7	43.6	42.6	40.9	43.9	41.9	42.4	42.5
CH_4	6.4	5.9	5.5	5.1	5.0	5.2	5.2	5.0	4.7	4.6	4.5	4.5	4.6	4.6	4.3
N_2O	6.1	5.2	4.5	3.9	4.1	4.2	4.2	4.3	3.9	3.8	3.8	4.1	3.9	4.0	4.1
HFCs, PFCs, SF_6	0.27	0.27	0.25	0.16	0.14	0.15	0.08	0.11	0.08	0.09	0.10	0.11	0.13	0.17	0.19
Total (with CO_2)	71.0	60.0	54.5	50.3	48.4	50.7	51.5	52.6	50.5	49.5	47.0	47.3	45.3	46.3	46.8
Total*	**73.4**	**63.5**	**58.6**	**54.6**	**51.7**	**53.4**	**54.0**	**54.0**	**52.4**	**51.2**	**49.4**	**52.5**	**50.5**	**51.1**	**51.0**

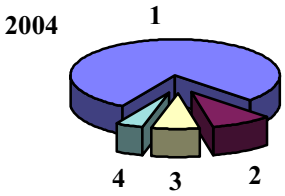
Source: SHMI

The table shows calculated years of 1990, 2000 – 2004 (the energy sector and LULUCF), 1991 – 1999 (LULUCF) and the use of solvents (1998-2004)
** Emissions without deducting the sinks in the sector of LULUCF (Land use-Land use change and forestry)*

Share of individual sources on greenhouse gases emissions



1990		2004
83.1 %	1. Power Industry	85.8 %
6.0 %	2. Industry Processes	10.3 %
11.3 %	3. Agriculture	8.2 %
2.9 %	4. Waste	4.4 %



Emission were assessed by 15.04.2006

Source: SHMI

Aggregated emissions of greenhouse gases (Tg) by sectors in CO_2 equivalents

	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
Power Industry*	59	51.2	47.4	44.5	41.5	42.8	43.4	43.6	41.9	40.8	39.4	42.3	40.2	40.8	40.2
Industry Processes**	4.26	3.37	3.35	3.04	3.36	3.56	3.59	3.74	4.36	4.47	3.91	4.11	4	3.99	4.85
Using solvents	NE	NE	NE	NE	NE	NE	NE	NE	0.01	0.01	0.01	0.03	0.06	0.06	0.08
Agriculture	8.06	6.89	5.87	5.13	4.94	5.1	4.89	4.76	4.33	4.1	4.14	4.22	4.14	4.02	3.86
LULUCF	-2.4	-3.5	-4.1	-4.3	-3.3	-2.7	-2.4	-1.4	-1.9	-1.6	-2.4	-5.2	-5.2	-4.8	-4.2
Waste	2.09	2.03	1.99	1.91	1.92	1.93	2.11	1.93	1.8	1.82	1.92	1.86	2.13	2.22	2.08

Source: SHMI

The table shows calculated years of 1990, 2000 – 2004 (the energy sector and LULUCF), 1991 – 1999 (LULUCF) and the use of solvents (1998-2004)
** Including the traffic*
*** Including the F-gases*

The most important greenhouse gas in the atmosphere is **water vapor** (H_2O) which contributes to total greenhouse effect by two thirds. CO_2 emissions are responsible for more than 30 % share on the greenhouse effect, CH_4, N_2O, and O_3 emissions make up approximately 3 %. The **HFC, PFC, and SF_6** groups of substances is not as important in terms of their total volumes, by which they contribute to greenhouse gases. It is more important in terms of their occurrence in the atmosphere, caused mainly by the human activity. The most important CO_2 emissions sources include incineration and transformation of fossil fuels, which represent more than 95 % of total anthropogenic emissions of CO_2 in Slovakia. Technological processes related to cement, lime, and magnesite production, as well as limestone use are the second most significant emission sources. The share of Slovakia on global anthropogenic emissions of greenhouse gases is approximately 0.2 %. Annual CO_2 emission corresponding to one inhabitant is currently around 7.7 tons/year per capita and places Slovakia among the leading European countries.

*The limit value of air pollution is **the level of air pollution** defined in order to avert, prevent or diminish harmful impact on human health, which should be reached in particular time, and from that time on it shall not be exceeded.*

§2 letter e/ of the Act No 478/2002 Coll. on Air Protection

• ACIDIFICATION

Air Acidification

Slovakia is a signatory to the **UN Economic Commission Convention on Long-Range Trans-boundary Air Pollution** (which became effective for ČSFR in March 1984 and Slovakia being its successor since May 1993). This Convention became the basis for protocols which also spelled out obligations for the signatories to reduce individual anthropogenic emissions of pollutants contributing to global environmental problems. The following text shows how individual protocols' s obligations in the area of acidification are met:

➢ ***Protocol on further reduction of sulfur emissions***

This protocol was signed in Oslo in 1994. Ratified by the Slovak Republic in January 1998 the protocol became effective in August 1998. Obligations of the Slovak Republic to reduce the SO_2 emissions as set forth in the Protocol (compared to the reference year of 1980) include:

Obligation to reduce SO_2 emission pursuant to Protocol on further reduction of sulfur emissions

Year	1980 (initial year)	2000	2005	2010
SO_2 emission (thous. t)	843	337	295	240
SO_2 emission reduction (%)	100	60	65	72

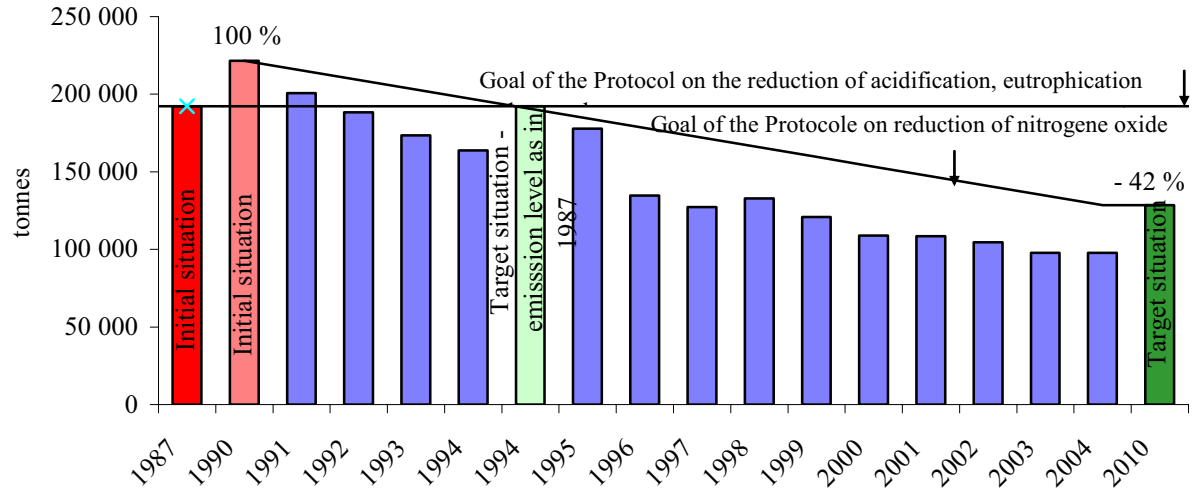
Slovakia met one of its Protocol objectives to reduce the SO_2 emissions in 2000 by 60 % compared to the reference year of 1980. In 2000 sulfur dioxide emissions reached the level of 123.880 thousand tons. which is 85 % less than in the years 1980.

➢ ***Protocol on the reduction of acidification eutrofication and ground ozone***

The protocol was signed in Göteborg in 1999. Slovakia signed the protocol in 1999. Slovakia obliged itself to reduce the SO_2 emissions by 2010 by 80 % the NO_2 emissions by 2010 by 42 % the NH_3 emissions by 2010 by 37 % and the VOC emissions by 2010 by 6 % in comparison to the year 1990.

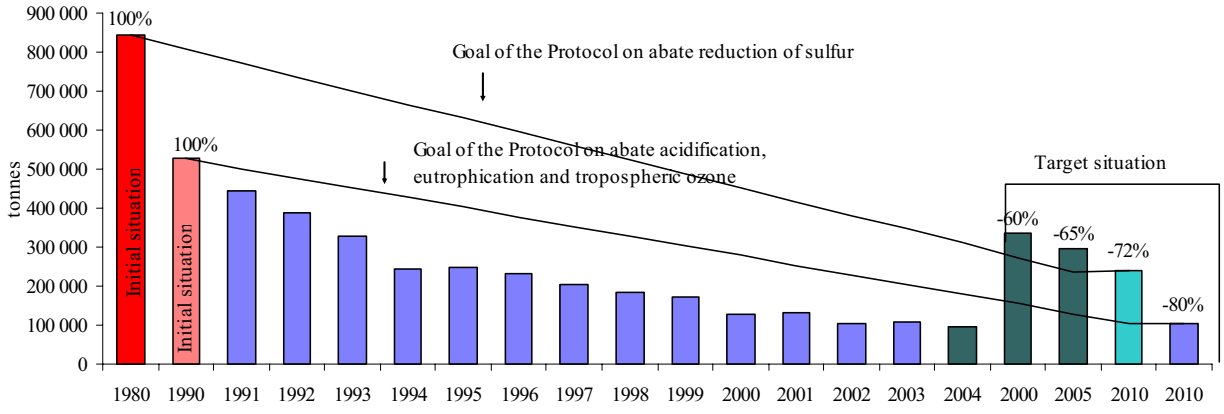
Slovakia has the potential to fulfill this obligation.

Trend in NO_x emission with regard to following the outcomes of international agreements



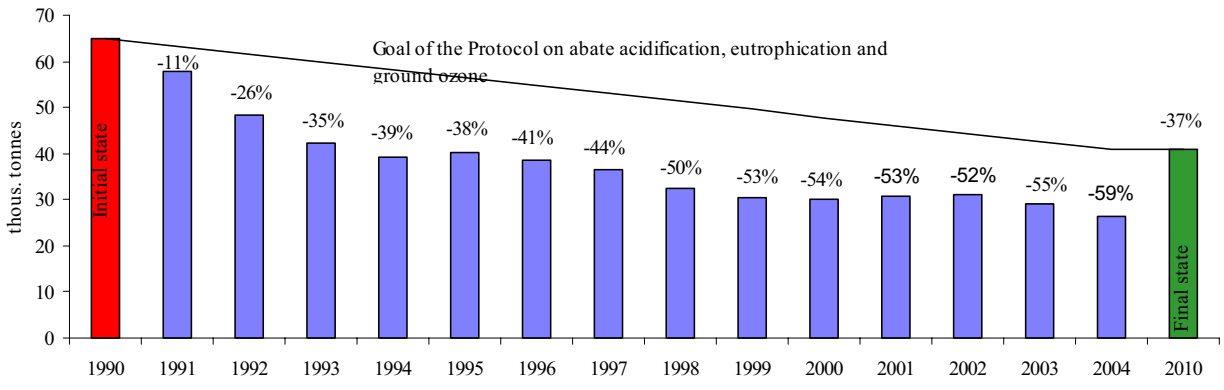
Source: SHMI

Trend in SO_2 emission with regards to following the outcomes of international agreements



Source: SHMI

Trend in NH_3 emission with regard to following the outcomes of international agreements



Source: SHMI

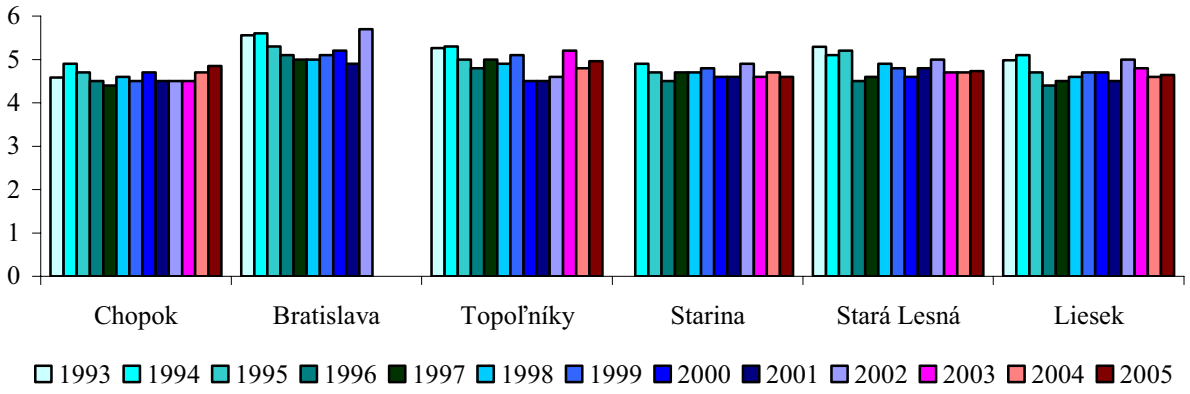
During the period of the years 1990 – 2004 in case of SO_2 and HN_3 the recorded reduction in emissions was obvious (with slight deviations in some years). Nitrogen oxides emissions showed a slight decrease only in 1995 and 1998 their increase was caused by increased natural gas consumption by retail consumers.

Acidity of atmospheric precipitations

Natural acidity of precipitation water in equilibrium with carbon dioxide has the pH of 5.65. Atmospheric precipitations are considered acidic if the bulk charge of the acidic anions is greater than the charge of cations and the pH value is below 5.65. Sulfates by approximately 60-70 % and nitrates by approximately 25-30 % contribute to the acidity of precipitation water.

Chemical analyses of atmospheric precipitation compared to the previous year document a slight reduction in the acidity at monitoring stations while at Starina there was a slight increase in acidity. Interval of the pH values in monthly precipitation figures varied at regional stations in the between 4.6 - 4.96. Time progression and the pH trend over a longer period of time suggest a reduction in acidity.

Trend of pH precipitation



Source: SHMI

Wet deposition of sulfates – year 2005

Station	Wet deposition of sulfates ($g.S.m^{-2}.y^{-1}$)
Chopok	0.47
Topoľníky	0.32
Starina	0.51
Stará Lesná	0.41
Liesek	0.50

Source: SHMI

Concentrations of dominant sulfates in precipitation water showed the interval of 0.41 - 0.62 mg $S.l^{-1}$ while values at all stations were lower than in the previous year. Greatest reduction was recorded at Chopok. The overall reduction in sulfate concentrations over a long period corresponds to the reduction of SO_2 emissions since 1980. Values of wet deposition of sulfur varied between 0.32 to 0.51 g $S.m^{-2}.r^{-1}$.

Critical load values for wet deposition are not yet specified. In USA and Canada wet deposition value of 0.7 g $S.m^{-2}$ per year for sulfates is considered the critical load for forests.

Nitrates that show less influence on the acidity of precipitations than sulfates showed the concentration interval of 0.25 - 0.40 mg $N.l^{-1}$. Nitrate concentrations at all the regional monitoring stations were lower than in 2004 with the exception of the Starina monitoring station.

Concentrations of ammonia ions in 2005 were lower at all regional stations in Slovakia compared to the previous year. The values remained the same at the station of Liesek. When compared to the previous year chlorides at most stations showed lower values with the exception of the Topoľníky and Liesek stations. Greatest reduction in chlorides was recorded at the Chopok station and the annual concentration level reached only two thirds of the value recorded in 2004. In 2005 the alkaline metals of sodium and potassium showed lower concentrations at most stations compared to 2004. Potassium showed a more significant reduction with the maximum value recorded at Chopok (50 %). Alkaline metals of calcium and magnesium were significantly lower than in the previous year. Topoľníky station was the only exception with both elements showing increased values while the Stará Lesná station showed also an increased level of calcium. Values at all stations were lower than in the previous year due to a significantly lower ionization in atmospheric precipitations in 2005.

Acidification of surface water

In general considering the diversity of the rock aquifer soil types hydrological and climate conditions general assessment of acidification renders itself difficult. In total we can say that the trend in the pH values sulfate concentrations and alkalinity of surface water show variable and fluctuating characteristics. Currently thanks to valid legal standards for releasing acidification mixtures the content of atmospheric and precipitation sulfates and nitrates dropped, meanwhile reducing the risk of acidification of surface and groundwater.

Acidification of soils

Acidification as a process of raising the soil's acidity represents one of the important processes of chemical degradation. Ability of the agro-ecosystem to cope with natural and anthropogenic acidification is defined by the capacity and potential of the buffering function of the soil. This reflects a degree of soil resistance to acidification. Since the major part of the agricultural land in Slovakia used to be acidic forestland humans are forced to introduce permanent measures to retain favorable degree of soil fertility and optimal soil reaction.

Partial Monitoring System – Soil provides information on the state and development of acidification of agricultural land. First cycle took place in the years 1992 - 1996 with the extraction of soil samples in

the year 1993 out of 312 monitoring sites. Second cycle took place in 1997 - 2001 with the extraction year of 1997 from 318 monitoring sites. Third cycle took place in 2002 - 2006 with the extraction year of 2002 from 318 monitoring sites.

The three monitoring cycles offer a possibility to assess not only the state but also the trend in acidification of agricultural land in Slovakia pH value of soil as well as the state of active aluminium are monitored within the Slovak soil monitoring process.

Outcomes from the Partial Monitoring System – Soil (PMS-S) showed that during 1993 through 1997 there were statistically negligible changes and stabilization in the soil‘s acidity. On the contrary outcomes from the third monitoring cycle with the extraction year of 2002 showed significantly greater acidification tendencies especially in case of mollic fluvisoils, cambisoils, rendzins, podsoils, rankers and lithomorphic soils.

Dependence of the active aluminium content on pH in selected Slovak soils in the A horizon within the basic PMS-S III. monitoring cycle

Major soil unit	pH/$CaCl_2$	Al ($mg.kg^{-1}$)
Cambisols and planosols – TTP	**4.39**	86.36
Cambisols and planosols – OP	**5.93**	16.32
Cambisols on acidic substrates - PG	**4.76**	55.85
Cambisols on acidic substrates - AL	**5.49**	4.380

AL - Arable Land
PG – Permanent Grassland

Source: SSCRI

*The mass media regularly and free of charge inform the public about the **situation of the ozone layer of the Earth** and about the values of the ultra-violet radiation falling on the area of Slovak Republic.*

§ 13 par.1 of the Act No. 76/1998 Coll. on Protection of the Ozone Layer of the Earth ... as amended by the Act No. 408/2000 Coll. and the Act No. 553/2001 Coll.

• OZONE LAYER DEPLETION

International liabilities concerning ozone layer protection

Due to the urgency of this global problem, the international community adopted at its UN platform a number of steps to eliminate the ozone layer depletion. First international forum with the first-ever mentioning of the ozone layer took place in Vienna in 1985, with the **Vienna Convention on the Ozone Layer Protection** signed there. In 1987, this document was closely followed by adopting the first enforcing protocol to the **Montreal Protocol on Ozone-depleting Substances**. Since that year, signatories to the Montreal Protocol met five times (in London (1990), in Copenhagen (1992), in Vienna (1995), and in Montreal (1997)), to limit or, if necessary, totally eliminate the production and consumption of substances that deplete the ozone layer.

Based on the Montreal Protocol's amendments and changes introduced by the **London and Copenhagen annexes**, consumption of the following controlled substance groups in the Slovak Republic should be zero, beginning by January 1, 1996: group I of Annex A of the Protocol (chlor-fluorinated fully-halogenated hydrocarbons), group II of Annex A of the Protocol (halones), group I of Annex B of the Protocol (other chlor-flourinated fully-halogenated hydrocarbons), group II of Annex B of the Protocol (other fully-chlor-fluorinated hydrocarbons), group II of Annex B of the Protocol (tetrachloromethane), and group III of Annex B of the Protocol (1,1,1-trichloroethane). Only substances from stores that are recycled and regenerated may be used. Exception is possible for these substances only for laboratory and analytical purposes. In accordance with the Annex to the Montreal Protocol signed in 1992 in Copenhagen and subsequently amended in Vienna in 1995, since 1996 the production and consumption of substances under group I, Annex C of the Protocol (non-fully-halogenated chlor-fluorinated hydrocarbons) is regulated with the obligation for their total elimination by 2020, and in the following 10 years these substances may be produced and used only for maintenance purposes at 0.5 %

of the reference year's 1989 calculated levels. Consumption of methyl bromide from the E I group, and pursuant to amendments approved in Montreal in 1997, should decrease by 25 % by 1999, by 50 % by 2001, by 70 % by 2003, and be totally eliminated by 2005. The year 1991 is the reference year. From January 1, 1996, production and consumption of substances under group II of Annex C of the Protocol (non-fully-halogenated bromine-fluorinated hydrocarbons) is forbidden.

Slovakia made effective the **Montreal Annex** to the Montreal Protocol on February 1, 2000. This document prohibits Slovakia to import and export all controlled substances, including methyl bromide, from and to non-signatory countries, as well as sets forth the obligation to introduce a licensing system for import and export of controlled substances. By adopting a new legislation, production and consumption of bromine-chloromethane was prohibited. This created conditions for ratification of the **Beijing Annex** to Montreal Protocol.

Consumption of controlled substances

Slovakia does not produce any ozone-depleting substances. All such consumed substances come from the export. These imported substances are used mainly in cooling agents and detection gases, solvents, and cleaning chemicals.

Consumption of substances under control in SR during 1992-2005 (tons)

Group of substances	1986/8#	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
AI - freons	1 710.5	609.6	986.9	229.4	379.2	1.21[1)]	2.05[1)]	1.71[1]	1.69[1)]	2.07	4.1	0.996	0.81	0.533	0.758
A II - halons	8.1	2.5	2.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0	-	-	-	-
BI* - freons	0.1	0.0	0.1	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0	-	-	-	-
B II* - CCl4	91.0	251.8	250.0	315.4	0.6	0.00	0.16[1)]	0.07	0.08	0.022	0.03	0.01	0.009	0.047	0.258
BIII* - 1,1,1 trichloroethane	200.1	107.3	180.0	136.7	69.4	0.00	0.11[1)]	0.00	0.00	0.00	0	-	-	-	-
C I*	49.7				37.2	61.00	59.90	90.48	44.92	64.73	66.8	71.5	52.91	38.64	48.76
C II - HBFC22B1						14.30	0.00	0.00	0.00	0.00	0	-	-	-	-
E** - CH_3Br	10.0					9.60	5.60	10.20	0.00	0.00	0.48	0.48	0.48	0.48	0.0
Total	2 019.5	971.2	1419.0	717.5	449.2	86.10	61.81	102.50	46.69	66.82	71.4	72.986	54.21	39.7	49.78

Source: MoE SR

[#] Initial usage
∗ Initial year 1989
∗∗ Initial year 1991
[1)] Usage of substances in groups A I, B II a B III between 1996-2001 represents import of these substances for their analytical and laboratory use in accordance with the general exception from the Montreal Protocol

Note 1: Besides the indicated substances, another 250 tons of recycled tetrachloromethane and 20 tons of regenerated freon CFC 12 *were imported in 1996, which (with reference to applicable methodology) are not counted in the consumption figures. The data from previous years on usage of substances in groups C I, C II and E are not available.*

Note 2: *Besides the indicated substances, another 40 tons of used Freon CFC 12 were imported in 1997, which (with reference to applicable methodology) are not counted in the consumption figures, and 2.16 tons of methyl bromide for Slovakofarma, which was used as base material for pharmaceutical production and with reference to applicable methodology also are not counted in the consumption figures.*

Note 3: *Besides the indicated substances, 8.975 tons of used coolant R 12 were imported in 1998, which belongs to group A1. With reference to applicable methodology of the Montreal Protocol it is not are not counted in the consumption figures.*

Note 4: *Besides the indicated substances, another 1.8 tons of used Freon CFC 12 were imported in 1999, which (with reference to applicable methodology) are not counted in the consumption figures, and 1.04 tons of methyl bromide for*

Slovakofarma, which were used as base material for pharmaceutical production and with reference to applicable methodology also are not counted in the consumption figures.
***Note 5**: In 2001, 0.48 tons of methyl bromide were imported for Slovakofarma, which were used as base material for pharmaceutical production and with reference to applicable methodology are not counted in the consumption figures.*
***Note 6**: In 2002, 0.48 tonnes CH_3Br were imported for Slovakofarma, which were used as base material for pharmaceutical product (Septonex) and with reference to applicable methodology are not counted in the consumption figures.*

Usage of substances under control in 2005 (tons)

Usage	Group of substances							
	AI	A II	BI	B II	BIII	C I	C II	E*
Coolant	-	-	-	-	-	48.76	-	-
Fire extinguishers	-	-	-	-	-	-	-	-
Isolating gases	-	-	-	-	-	-	-	-
Detection gases, diluents, detergents	0.758	-	-	0.258	-	-	-	-
Aerosols	-	-	-	-	-	-	-	-
Swelling agents	-	-	-	-	-	-	-	-
Sterilizers, sterile mixtures	-	-	-	-	-	-	-	-

Source: MoE SR

E- CH_3Br was used by production of a pharmaceutical product (Septonex), where it is used completely*

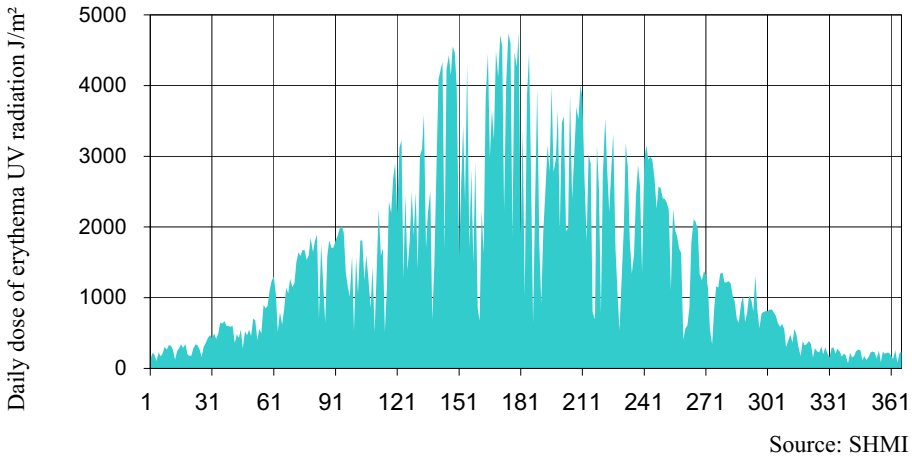
Situation of the ozone layer above the territory of SR

Due to ozone's depletion, its state in the atmosphere is monitored. In 2005, the **average annual value of total atmospheric ozone was 324.2 Dobson units**, which is 2.3 % below the long-term average from measurements in Hradec Králové in 1962-1990. Values from these measurements have been used also for our territory as the long-term normal value.

Situation was better, compared to 2004 when 4.1 % of total atmospheric ozone was missing on average. This was the fourth highest annual average since 1994. Average monthly deviations showed positive values only for February, November, and December. In other months, there was 1-7 % of total atmospheric ozone missing on average. In 2005, May was the month with the weakest ozone layer above our territory.

Total sum of daily doses of the erythematous ultraviolet radiation for the period of April-September was 440 144 J/m^2. This value is lower by 0.2 % than in 2004.

The annual course of the midday values of erythema (CIE) radiation – Gánovce 2005



Source: SHMI

With respect to the recent scientific knowledge, the long-range goal concerning the ozone is to achieve ***the level of ozone concentration in air,*** *at which the direct harmful effects on human health or on the environment will be unlikely; this goal should be achieved, if possible, with the long range prospective, so that effective protection of human health and environment is provided for.*

§ 5 par.4 of the Act No. 478/2002 Coll. on Air Protection

• TROPOSPHERIC OZONE

Average concentrations of tropospheric ozone in the Slovak territory were growing during the years 1973 – 1990 by app. 1 $\mu g.m^{-3}$ per year. After 1990, in line with all Central European monitoring outcomes, no significant trend in average concentrations was recorded. Maximal concentrations were decreasing over the last decade. However, ground ozone values are more than two-times higher than they were in the beginning of this century. The exceptional year of 2003 showed extraordinary hot patterns with increased concentrations recorded at all stations.

Ground ozone concentrations in the Slovak territory in 2005 were only slightly below the figures of the record-breaking year of 2003. The highest average concentration was recorded at the mountain station of Chopok (96 $\mu g.m^{-3}$).

Target value of ground ozone concentration in terms of public health protection is set by the MoE SR Resolution No. 705/2002 Coll. on air quality at 120 $\mu g.m^{-3}$ (max. daily 8-hour average). This value must not be exceeded on more than 25 days in of the year, for three consecutive years. For the period of 2002 - 2005, this target value has been exceeded at all stations, with the exception of Ružomberok, Prievidza, and Veľká Ida. Concentrations exceeding the public alarm threshold value (240 $\mu g.m^{-3}$) were no recorded in 2005. Four stations recorded figures that exceeded the information threshold (180 $\mu g.m^{-3}$), mostly in Bratislava (8 times at Mamateyova).

Number of days with exceeded target value for the 8-hour concentration (120 $\mu g.m^{-3}$) in 2003 - 2005

Station	Averaged in 2003 - 2005
Banská Bystrica, Nám. slobody	29
Bratislava – Jeséniova	53
Bratislava - Mamteyova	36
Chopok, EMEP	78
Gánovce, Meteo. st.	30
Hnúšťa, Hlavná	34
Humenné, Nám. slobody	40
Jelšava, Jesenského	30
Kojšovská hoľa	66

Košice, Ďumbierska	34
Liesek, Meteo. st., EMEP	-
Martin, Jesenského	-
Prešov, Solivarská	26
Prievidza, J. Hollého	17
Ružomberok, Riadok	11
Stará Lesná, AÚ SAV, EMEP	27
Starina, Vodná nádrž, EMEP	40
Štrbské Pleso, Helios	33
Topoľníky, Aszód, EMEP	59
Trenčín, Janka Kráľa	-
Veľká Ida, Letná	0
Žiar nad Hronom, Dukel. hrdinov	43
Žilina	28

Source: SHMI

Target value for the **AOT40 vegetation protection exposition index** is 18 000 µg.m^{-3}.h (MoE SR Resolution No. 705/2002 Coll. on air quality). The average value for the years 2001-2005 was exceeded at all urban background and rural background stations.

Index of AOT40 exposition for protection of vegetation during 2001-2005 (µg.m^{-3}.h)

Station	Averaged in 2001 - 2005
Banská Bystrica, Nám. slobody	19 512
Bratislava - Jeséniova	22 158
Bratislava - Mamteyova	16 975
Chopok, EMEP	31 739
Gánovce, Meteo. st.	19 283
Hnúšťa, Hlavná	19 437
Humenné, Nám. slobody	17 061
Jelšava, Jesenského	19 758
Kojšovská hoľa	25 157
Košice, Ďumbierska	19 770
Liesek, Meteo. st., EMEP	-
Martin, Jesenského	-
Prešov, Solivarská	16 092
Prievidza, J. Hollého	13 039
Ružomberok, Riadok	11 348
Stará Lesná, AÚ SAV, EMEP	16 586
Starina, Vodná nádrž, EMEP	17 180
Štrbské Pleso, Helios	25 974
Topoľníky, Aszód, EMEP	19 748
Trenčín, Janka Kráľa	-
Veľká Ida, Letná	8 165
Žiar nad Hronom, Dukel. hrdinov	20 160
Žilina	15 804

Source: SHMI

1 Arranged in compliance with the EU requirements for the missing values according to relationship
AOT40 (arranged) = AOT40 (measured) x number of available values/number of valid measured values

* According to Regulation of the MoE SR 705/2002 Coll. Of Laws on Air Quality (in line with the EU Directive 2002/3/EC dated 12.2.2002 on ozone in the Ambient Air) the exposition index AOT40, expressed in µg.m^{-3}.h, means the sum of all differences between hourly concentrations bigger than 80 µg.m^{-3} (40 ppb) and 80 µg.m^{-3} between 8.00 and 20.00 Central European time from 1May until 31 August, averaged in 5-year time. The AOT40 values in the table were corrected upon the requirements of the EU to the absent measurements, according to relationship: *AOT40 (corrected) = AOT40 (measured) x number of available values/number of valid measured values.*

Eutrophication *is enrichment of water by nutrients, especially compounds of nitrogen and phosphorus, causing an increase in growing cyanobacteria, algae and higher herbal species, which can result in undesirable deterioration of ecological stability and quality of this water.*

§ 2 letters ac/ of the Act on Water No. 364/2004 Coll., amending the Act No. 372/1990 Coll. on Offences as subsequently amended (Water Act)

• EUTROPHICATION

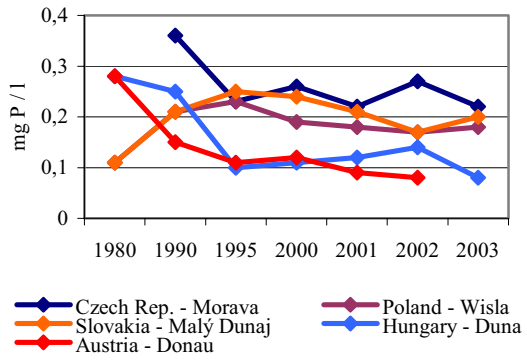
Eutrophication means enriching the water with nutrients, mainly nitrogen and phosphorus compounds, which causes an increased growth of algae and higher plant forms. This may bring about an undesirable deterioration in the biological equilibrium and quality of such water. Indicators for the surface water eutrophication include $N\text{-}NH_4$, $N\text{-}NO_3$, $N\text{-}NO_2$, $N_{org.}$, $N_{tot.}$, $P_{tot.}$, with phosphorus as the limiting element being most critical.

General requirements for the surface water quality are set forth in the Government Ordinance SR No. 296/2005 Coll. which introduces requirements on the quality and qualitative goals of surface water, as well as the limit indicator values for wastewater and special water contamination. Annex 1 of this Ordinance defines the recommended values for total nitrogen (9.0 $mg.l^{-1}$), total phosphorus (0.4 $mg.l^{-1}$), and chlorophyl „a“ (50.0 $\mu g.l^{-1}$). In this sense, the most problematic watercourses include Morava, Nitra, and Ipel. Nutrient concentrations are generally higher toward the mouth of the river. Acceptable surface water quality that meets class II. and III. criteria for the period 2004-2005 was around 64 %. Assessing the whole **C - nutrients** group and comparing it with previous time period, there have not been major changes.

Effect on nutrients concentrations in the EU countries may be seen in agriculture and other industries that produce nitrates, as well as in hydrological conditions of individual countries. Concentration of total phosphorus in the EU watercourses is relatively stable and shows a decreasing trend. Nitrates concentrations in watercourses remained relatively stable and are higher in those west-European countries (e.g. Denmark) with most intensive agriculture activities. New member states show a falling tendency in nitrates, which may be caused by a gradual decrease in agricultural production and more orientation on the market economy.

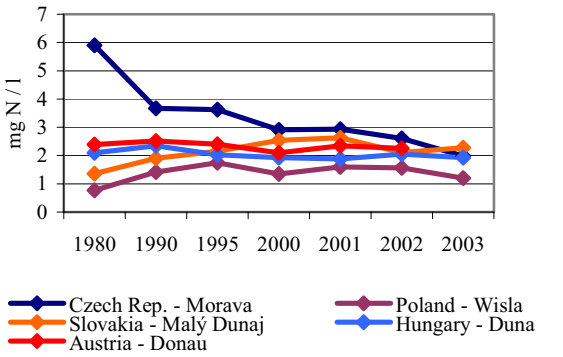
Development in nutrients' concentration in selected countries

Total Phosphorus (mg P. l^{-1})



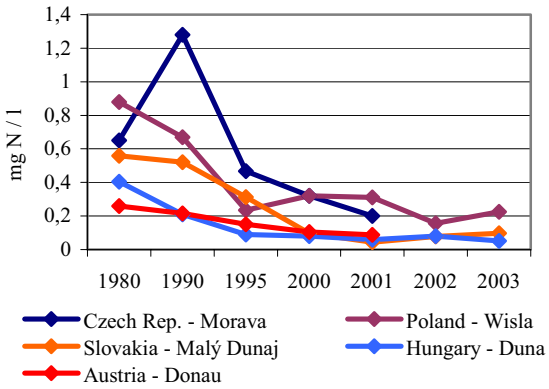
Source: OECD

Nitrates (mg N. l^{-1})



Source: OECD

Ammonium (mg N.l^{-1})



Source: OECD

Quality of recreational water in 2005

The summer tourist season in 2005 was significantly influenced by adverse weather patterns. This resulted in low tourist figures at recreational water resorts, low number of extracted samples, and in shorter length of the swimming season. Natural pools and non-thermal artificial pools showed the highest degree of weather impact. Operators in the northern districts evaluate the full operation during at a typical summer weather to last the maximum of 13 days.

Demands for recreational water quality are set forth by the Act No. 272/1994 Coll. on public health protection as amended, and the Regulation of the MoH SR No. 30/2002 Coll. on recreational water demands, recreational water and pools quality control as amended, which is in accordance with the Board Resolution 76/160/EEC from December 8, 1975 on recreational water quality.

Over the season, 315 water samples were extracted and 4 060 tests were done on chemical, physical, microbiological, and biological water quality indicators. Limit value of detected indicators was exceeded in 141 samples and for 218 indicators. Causes for unacceptable water quality included increased values in **chemical indicators**: color, transparency, pH, and **in microbiological indicators**: enterococci, coliform bacteria, thermo-tolerant coliform bacteria, Escherichia coli, molds, and in **biological indicators**: chlorophyl "a", numbers of blue-green algae, saprobic index, algae.

Selected indicators of water quality in lakes and ponds in the SR, assessed as natural swimming resorts in 2005

Name of location in the cadastral area (district)	Area (km^2)	Min. Transparency (m)	N anorg. ($N\text{-}NO_3+N\text{-}NO_2+N\text{-}NH_4$) - ($mg.l^{-1}$)	P-PO_4 ($\mu g.l^{-1}$)	Chlorophyll "a" max. value ($mg.m^{-3}$)	Saprobity Index
Veľký Draždiak	0.13	1.0	0.6825	-	2.4	1.81
Zlaté Piesky	0.56	0.8	0.72	-	9.2	1.85
Vajnorské jazerá	0.14	1.0	1.83	-	2.75	1.84
Slnečné jazerá Senec	1.16	0.65	-	-	6.62	1.77
VN Ružiná – pri obci Divín	1.7	0.80	1.24	-	16.95	1.4
Zelená voda - Kurinec	0.25	0.20	1.07	-	21.53	1.945
Teplý Vrch - Drieňok	1.2	1.7	1.165	-	7.66	1.835
Dolnohodrušské jazero	0.049	1.1	0.91	-	4.82	1.69
Veľké Richňavské jazero	0.076	1.6	0.76	-	4.17	1.726
Počúvadelské jazero	0.117	1.7	1.04	-	2.73	1.69
Veľké Kolpašské jazero	0.191	1.1	0.92	-	3.83	1.83
Bukovec – rekreačná nádrž	0.297	1.5	1.25 ($N_{tot.}$)	-	7.70	1.47
Ružín – Košice a okolie	0.46	1.8	1.408 ($N_{tot.}$)	-	17.93	1.59
Vinianske jazero - Vinné	0.08	0.4	0.51 ($N_{tot.}$)	-	23.798	1.91
Zemplínska Šírava – Biela Hora	34	1.0	1.15 ($N_{tot.}$)	-	14.91	1.76
Veľká Domaša - Tíšava	0.005	1.1	1.2	-	5.4	1.72
Veľká Domaša - Valkov	0.01	1.2	1.4	-	4.4	1.71
Veľká Domaša – Dobrá pláž	15.1	1.9	0.94	-	-	1.7
Nové Mesto nad Váhom - Zelená voda	0.18	1.2	2.92 ($N_{tot.}$)	-	4.98	1.73
Kunovská priehrada	0.633	0.95	-	-	14.4	1.8
Gazarka – Šaštín Stráže	0.12	0.2	-	-	62.4	1.85
Šulianske jazero	0.742	1.5	-	-	4.1	1.85
Vojkanské jazero	0.814	1.7	-	-	<4.0	1.76
Liptovská Mara	0.8	1.5	1.61 (N_{tot})	-	18.51	1.702

Legend: ND – non detected, ŠJ – gravel deposit of lake, VN – water reservoir Source: MoH SR

Report on recreational water quality was also submitted for the year 2005, in compliance with the Bathing Water Directive No. 76/160/EEC for the 2005 swimming season. The Report included only 39 monitored aquatic areas, which meant a reduction by 41.8 %, compared to 2004. Of all 39 water areas, less than 35.9 % met the recommended standards, while 46.3 % met at least the minimum standards. Almost 35.9 % of water areas were not sufficiently monitored and swimming was prohibited in less than 7.7 %. The overall European Commission Report suggested that more than 10.3 % of water tanks and lakes in Slovakia do not meet the minimum EU standards.

Nature and Landscape Protection *is the limitation interferences, which can threaten, harm or destroy living conditions and forms, natural heritage, scene, lower its ecological stability, as well as consequences elimination of such interferences. Nature protection is also taking care of ecosystems.*

§ 2 par. 1 of the Act No. 543/2002 Coll. on Nature and Landscape Protection

NATURE AND LANDSCAPE PROTECTION

• NATURAL HERITAGE AND ITS PROTECTION

Protected areas

♦ **Protected areas network**

Pursuant to the **Act No. 543/2002 Coll. on nature and landscape protection**, the system of complex nature and landscape protection is carried out under 5 protection levels and in the following protected areas (PA) categories:

1st level of protection - territory of the SR not included in any of the higher levels of protection

2nd level of protection - protected landscape area (PLA),
- protected landscape fragment (PLF),
- zone D of protected area,
- protective zone of the PA with 3rd level of protection.

3rd level of protection - national park (NP),
- protected site (PS),
- protected landscape fragment,
- zone C of the protected area,
- protective zone of the PA with 4th level of protection.

4th level of protection - protected site,
- nature reserve (NR), national nature reserve (NNR),
- nature monument (NM), national nature monument (NNM),
- protected landscape fragment,
- zone B of the protected area,
- protective zone of the PA with 5th level of protection.

5th level of protection - protected site,

- nature reserve, national nature reserve,

- nature monument, national nature monument,

- protected landscape fragment,

- zone A of the protected area,

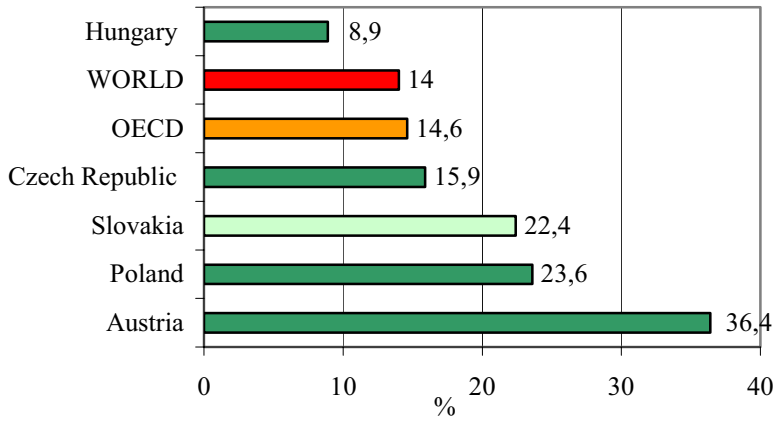
- *cave and cave protective zone,*
- *natural waterfall and protective zone of the natural waterfall,*
- *special protection area (SPA)*

In 2005, **1 Nature Reserve and 3 SPAs were declared**, while 2 NRs were revised and 4 NNMs were declared protective zones (for 3 of them effective from January 1, 2006) 1 NR, 2 PSs, and 2 NMs were **cancelled** in 2005. **Tourist guidelines** were published for the Nízke Tatry National park, Veľká Fatra National Park, Malá Fatra National Park (effective from January 1, 2006), and NNM Krásnohorská cave. 6 protected areas projects were submitted in 2005.

In 2005, protection level was decreased for 18 small-size protected areas through regional generally binding resolutions. 5th level of protection was reduced to 4th protection level for 8 nature reserves and 4 nature monuments. For 6 protected sites, level 4 was reduced to protection level 3.

- **Total size** of protected nature elements under special protection in the 2nd to 5th level of protection in the SR represents **1 135 429.0958 ha**, which represents 23.16 % of the Slovak territory.
- Besides the mentioned elements there are **3 special protected areas** in Slovakia with total size of 111 718.45 hectares and **cave protective zones** with total size of 633 ha.

Proportion of PA on total size for selected countries (2004)



Source: OECD

Protected areas in the Slovak Republic (state to 31st December 2005)

Category	Number	Designated size of protected area (ha)	Designated size of protective zone (ha)	% of SR territory
Protected landscape areas	14	522 582	-	10.66
National parks	9	317 890	270 128	11.99
NP + PLA together	**23 1 110 599 ha**	**840 471**	**270 128**	**22.65**
Protected sites	179	5 201	2 419	0.16
Nature reserves	381	12 797	244	0.27
National nature reserves	2	52	0	0.00
Nature monuments	219	83 712	2 810	1.76
National nature monuments	228	1544	207	0.04
Total SSPA*	60	59	660	0.01

* SSPA – small-size protected areas

Source: SMNPaS

In total, there are **243** small-size protected areas (SSPA) with total size of 12 123.66 ha (together with protective zones this represents 2.32 % **of total PLA territory**), while **in the territory of national parks and their protective zones (PZ)** there are **264** SSPA with total size (including PZ) of 72 947.7740 ha (**12.41 %** of the NP area and their PZs). **Outside PLA, NP, and NP PZ**, which means **the open landscape**, there are **562** small-size protection areas with the size of 24 830.1161 ha (**22.63 %** of total SSPA and SSPA PZ territory in Slovakia, and 0.65 % of the Slovak territory outside PLA, NP, and NP PZ.

♦ Endangerment and degradation of the protected areas

The condition of protected areas ranked into the 4th and 5th level of protection and protected trees is evaluated in 3 endangerment categories. Of the total number of 1 069 small-size protected areas in the 3th - 5th level of protection, there were **degraded** 37 territories of area of 261 ha (this area presents 0.2 % of total area of SSPA), 458 **endangered** (25 % of area) and in the **optimal condition** there were 571 territories (74.8 % of area).

Endangerment and degradation of SSPA in the 3th - 5th level of protection

Category	Condition to 31st December 2005		Optimal		Endangered		Degraded	
	number	area (ha)	number	area (ha)	number	area (ha)	number	area (ha)
PS	179	7 620	50	4 286	107	3 263	21	71
NR	381	13 041	207	8 929	165	3 957	8	155
Private PA	2	52	2	52	-	-	-	-
NNR	219	86 522	149	67 243	70	19 279	-	-
NM	228	1 751	113	892	106	824	8	35
NNM	60	719	50	648	10	71	-	-
Total	**1 069**	**109 704**	**571**	**82 049**	**458**	**27 394**	**37**	**261**

Note: In the area of SSPA there are included areas of SSPA protective zones

Source: SNC SR

♦ Care of the protected areas

Professional nature protection organisations carried out **81 inventory researches** in 2005, including 46 zoological, 31 botanical, and 4 other. The researches were implemented within SSPA, large-size protected areas, as well as in open landscape.

Professional nature protection organisations carried out **regulatory intervention** in the field of practical care of the specially protected nature and landscape parts, with total cost of 4.5 mil. SKK, with more impacts into the this territory (mowing, tree cutting, elimination of younglings, protective treatment of rare tree types, liquidation of invasive plant species).

During the year 2005 State nature conservancy of the SR (SNC SR) elaborated 8 875 **nature and landscape impact proposals**. The biggest rate was created by the building and regional planning activities (23.1 %), department of tree species protection (16.8 %) and department of species protection of the plants and animals (12.5 %). Viewpoints relating to forestry created 8.0 %, territorial protection 7.2 %, inorganic nature 5.5 %, agriculture 5.2 % and water management 4.1 % of all viewpoints.

Within the organisation units of State Nature Conservancy of the SR, in 2005 there were **53 educational paths (EP)** and **11 educational localities (EL)**. Besides them, there also exist EP and EL administered by other organisations. In 2005, the State Nature Conservancy of the SR administered **14 information centres of nature protection**, and the **Nature Protection School** in Varín.

Review of Biosphere Reserves and Ramsar-wetlands in selected countries

		Slovakia	Czech Rep.	Poland	Hungary	Austria
Biosphere Reserves (BR)	Number	4	6	9	5	5
Ramsar-wetlands	Number	13	10	8	21	11
	area (km^2)	389	419	905	1 541	1 180

Source: UNESCO-MaB, Ramsar Convention Bureau - in OECD Compendium 2002

CR) BR: one common with Poland.
SR) BR: one common with Poland and one with Ukraine.
Poland) BR: one common with Czech Republic and with Slovakia and one with Slovakia and Ukraine.

♦ **NATURA 2000 in Slovakia**

Basic part of the European strategy of biodiversity and ecosystems protection is a full implementation of the **NATURA 2000** system, which represents, or should create, a consistent European ecological network of protected areas under special attention of the EU community, and which will be created by member states, independent of their national PA network.

The system NATURA 2000 is formed by two types of territories:

- sites of Community importance (SCI) - sites proposed as protection areas on the basis of criteria set by the *Council Directive No. 92/43/EEC on the conservation of natural habitats and of wild fauna and flora* (Habitats Directive); national list of these territories is approved by the Slovak Government, which sends it, after agreement, to the EC for its approval.

SCI are proposed for **51 plant**, **95 animal species** and **66 types of biotopes.**

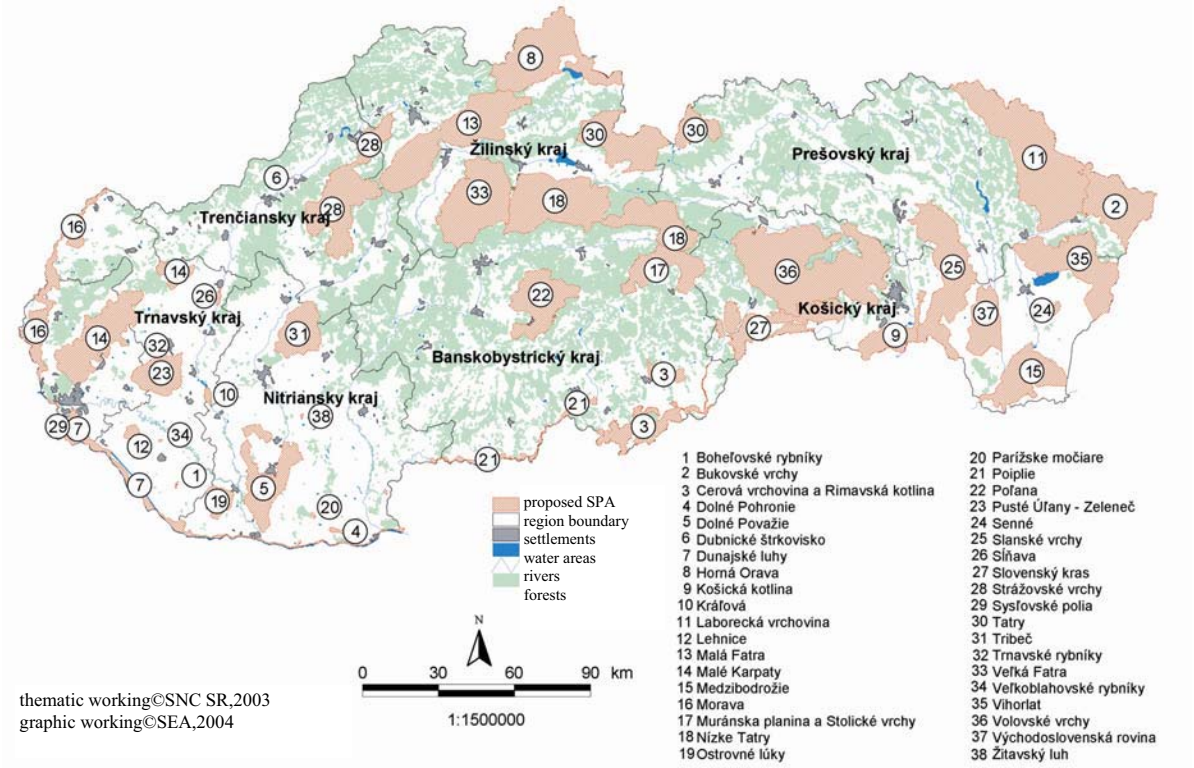
Into the proposed list of the sites of Community importance in the SR there were listed **382**

territories with the area of **573 690 ha**. The territories cover **11.7 % of the SR area**, lapping with present network of protected areas is **86 %**. From the total area of the SCI, there is 86 % on forest land, 10 % is on agricultural land, 2 % is created by water areas and 2 % are other areas.

National list of SCI was published *on the basis of the MoE SR Edict* of July 14, 2004, which publishes the national list of the sites of Community importance. These territories are presently under the so-called preliminary protection, which means the proposed protection level.

In 2005, there were negotiations with the European Commission, where the national list was assessed in terms of sufficient documentation of species and biotopes. Similarly to the other countries, Slovakia currently undergoes a revision of the national list of those biotopes and species that were considered insufficiently documented.

Approved proposal of the special protection areas



Source: SNC SR

- special protection areas (SPA) - sites proposed as protection areas on the basis of the criteria set by the *Council Directive No. 79/409/EEC of April 2, 1979, on the conservation of wild birds* (Birds Directive).

National list of pSPA was approved by Slovak Government on 9th July 2003. The proposal includes **38 SPA**. Their total area represents **1 236 545 ha** and covers **25.2 % of the SR area**. Average area of pSPA is 32 541 ha, lapping of pSPA with importance birds areas (IBAs) presents 61.8 % of the SR area and lapping of pSPA with the existing network of protected areas in the SR presents 55.15 %.

The Slovak Government approved the SPA national list on July 9, 2003. In 2004 began the process of creating resolutions and care programmes for individual special protection areas. As of the end of 2005, there were declared **3 SPAs** by a single resolution: **Horná Orava, Malé Karpaty** and **Lehnice**.

Agricultural and forestland in the NATURA 2000 territories

NATURA 2000	Number	Area (ha)	Agricultural land area (ha)	Share of agricultural land (%)	Forest land area (ha)	Share of forest land (%)
SPA	38	1 236 545	365 102	29.5	655 622	53.0
SCI	382	573 690	54 657	9.5	497 295	86.7

Source: SNC SR

Comparison of the pSCI and pSPA areas in Slovakia with selected countries of EU (2005)

Country	SPA			SCI		
	number	area (km²)	% of country area	number	area (km²)	% of country area
Austria	94	9 275.5	11.1	164	8 883.9	10.6
Czech rep.	38	6 936.2	8.8	864	7 244.1	9.2
Hungary	55	13 519.1	14.5	467	13 929.2	15.0
Poland	72	33 156.3	7.8	192	13 123.9	4.2
Slovakia	38	12 294.8	25.2	382	5 739.4	11.8
EU	**4 317**	**412 564.3**	**8.9**	**20 582**	**552 193.3**	**12.1**

Source: EC

Protected trees

The network of protected trees was created by 479 protected trees and their groups including alleys (protected objects). Physically it is represented by 1 321 solitary trees of 70 taxons, including 32 domestic and 38 alien taxons.

There were 313 in the **optimal** state (65 %), 132 were **endangered** (28 %) and 34 **degraded** (7 %) of the protected trees and their groups.

Protected minerals and fossils

Protection of minerals and fossils is regulated by § 32 and § 38 **of Act No. 543/2002 Coll.** on nature and landscape protection and **Decree of MoE SR No. 213/2000 Coll.** on protected minerals and protected fossils and on their social evaluation, which stated the list of protected minerals and protected fossils and their social value.

The list of **protected minerals** includes:

- 12 typological minerals, first time scientifically documented from the Slovak territory,
- 61 significant minerals or rare occurrence in Slovak sites, and having European significance, or minerals with specific morphological shape or trend,
- meteorites found in Slovakia's territory.

The list of **protected fossils** includes:

- 655 typological fossils that represent an irreplaceable, unique material of extinct plants and animals that served to describe the specific taxonomic group for the first time,
- selected groups of fossils with rare occurrence that thanks to their characteristics and degree of preservation are unique testimonies of the evolution of organisms in the Slovak geological past.

The samples of protected minerals and protected fossils are deposit especially in the collections of state nature scientific museums.

Protection of monuments and historic sites *is the summary of activities and measures aimed at the identification, research, documentation, conservation, renovation, restoration, regeneration, use and presentation of cultural heritage monuments and historic sites.*

§ 2 par. 7 of the Act No. 49/2002 Coll. on the Protection of Monuments and Historic Sites

• MONUMENT FUND AND ITS PROTECTION

Monuments and historic sites

Immovable cultural monuments form the basis of landscape **historic residential settlements.** In 2005, there was a slight increase in total number of immovable (also movable) cultural monuments, compared to 2004.

Trend in the structure of immovable national cultural monuments (NCM) by types

Categorization of immovable NCM*	Number of cultural monuments							
	1998	1999	2000	2001	2002	2003	2004	2005
Architectural monuments	7 366	7 426	7 515	7 549	7 612	7 650	7 709	7 738
Archaeological monuments	337	337	340	342	343	351	354	360
Historical monuments	1 414	1 402	1 397	1 398	1 410	1 373	1 405	1 386
Historical gardens and parks	333	332	333	335	337	339	339	340
Folk architecture monuments	1 779	1 775	1 821	1 821	1 812	1 784	1 837	1 833
Technical monuments	459	450	451	458	462	451	449	454
Art work monuments	767	782	818	819	943	947	977	1 005
Total	**12 455**	**12 504**	**12 675**	**12 722**	**12 919**	**12 895**	**13 070**	**13 116**

* Presented is the number of monument buildings, which comprise the immovable NCM. Source: MB SR

To 31st December 2005, there were 9 501 **immovable national cultural monuments** in Slovakia consisting of **13 122 monument buildings** and **14 392 movable national cultural monuments** (98 % of it has sacral character), which consist of **30 230** cultural articles.

According to literary sources there were in Slovakia about 300 **castles,** while in the presence there are 109 **castles and mansions** and 436 **manor houses**.

Within the **monument buildings** in the SR there are:

- 554 manor houses and curias
- 109 castles
- 80 monasteries
- 1 524 churches
- 1 310 rustic houses
- 2 454 burgher's houses
- 198 palaces and villas
- 609 wayside sculptures and crosses
- 539 memorial tablets and places

As of 2005, there were 86 **unused** cultural monuments in Slovakia (according to the MB SR catalogue).

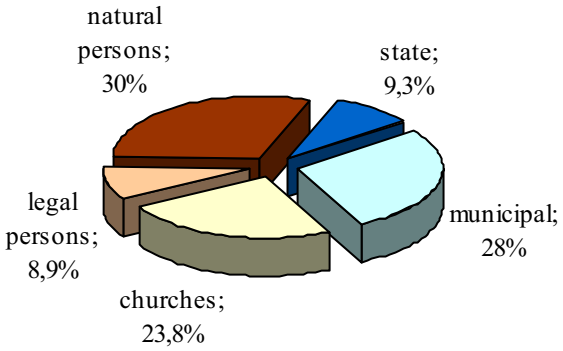
Legal protection of monument fund in the SR

(number of monument buildings / articles)

NCM	2003	2004	2005
Proclaimed	86	93	100
Cancelled	111	30	48

Source: MB SR

The ownership form of immovable NCM (2005)

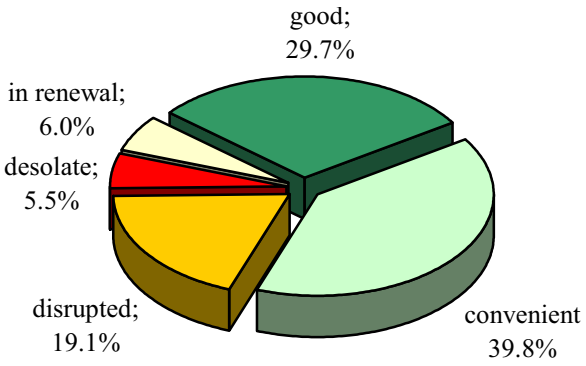


Source: MB SR

Trend in the **ownership form** of cultural monuments (CM) in 2005 was not typical. While since 1993, the share of monuments in the ownership of the state would gradually decrease by 1 % (from 23 % to 14.7 % in 2004), in 2005 it dropped sharply by 5 % - to 9.3 %. This was the result of the state property delimitation to municipalities and VÚC (upper-tier self-governing units).

In terms of the **construction-technical state,** there were damaged 2 503 monument buildings of immovable national cultural monuments, 720 were in desolate state, and 781 were under in renewal. There is a gradual decrease in the percentage of the "good" state, from 34 % in 1993 went down to 29.7 % in 2005. On the other hand, the percentage of endangered monuments that are disrupted or desolate is also decreasing (from 27 % in 1993 to 24.6 % in 2005). This means that the **state of the majority of monuments moved under the category of acceptable,** from 33 % to almost 40 %. When added to the monuments in good state, it is almost 70 % of monument fund that is in satisfactory state.

Construction-technical state of immovable NCM in 2005



Source: MB SR

Preservation of monuments in SR is provided by **Act No. 49/2002 Coll. on the protection of monuments and historic sites**. The aim of the Act is also to create general conditions for financing of the preservation and renewal of the historical monuments from more sources including the forms of non-state aid.

Besides the preservation of the historical monuments – the objects as solitaires, the monument fund **is also area preserved** in the monument areas: monument reserves (MR) and monument zones (MZ).

Historical settlement structures in the Slovak republic (2005)

Historical settlement structures (HSS)	Total number of HSS
Town reserves	18
Folk architecture reserves	10
Historical preserved parks	339
Monument zones	85

Source: MB SR

Restoration of cultural monuments

In 2005, there was 94 648 thous. SKK in contributions by the MoC SR to the restoration of national cultural monuments in the SR within **323 projects.** The funds came from the **programme "Let us renovate our house".** It is a complex development programme that supports renewal of national cultural monuments.

Contributions of MoC SR for the restoration of national cultural monuments from the programme "Let us renovate our house"

	2003	2004	2005
Number of projects	160	920	323
Total funding (thousands SKK)	24 000	118 380	94 648

Source: MB SR

The ministry on its own initiative, on initiative of the The Monuments board or on initiative of any individual or any corporation, can propose a cultural monument or monument areas for ***inscription in the World Heritage List*** *on conditions specified in the international agreement (Convention concerning the Protection of World Cultural and Natural Heritage)*

§ 21 par. 1 of the Act No. 49/2002 Coll. on the Protection of Monuments and Historic Sites

• SLOVAK CONTRIBUTION TO THE WORLD HERITAGE

Sites enlisted under the World Heritage List

In 2005, the **World Heritage List** contained **811** sites (including 630 cultural, 159 natural, and 23 mixed) from **137** signatory countries to the *Convention concerning the protection of World culture and natural heritage*, **five** of them from the Slovak territory. These are:

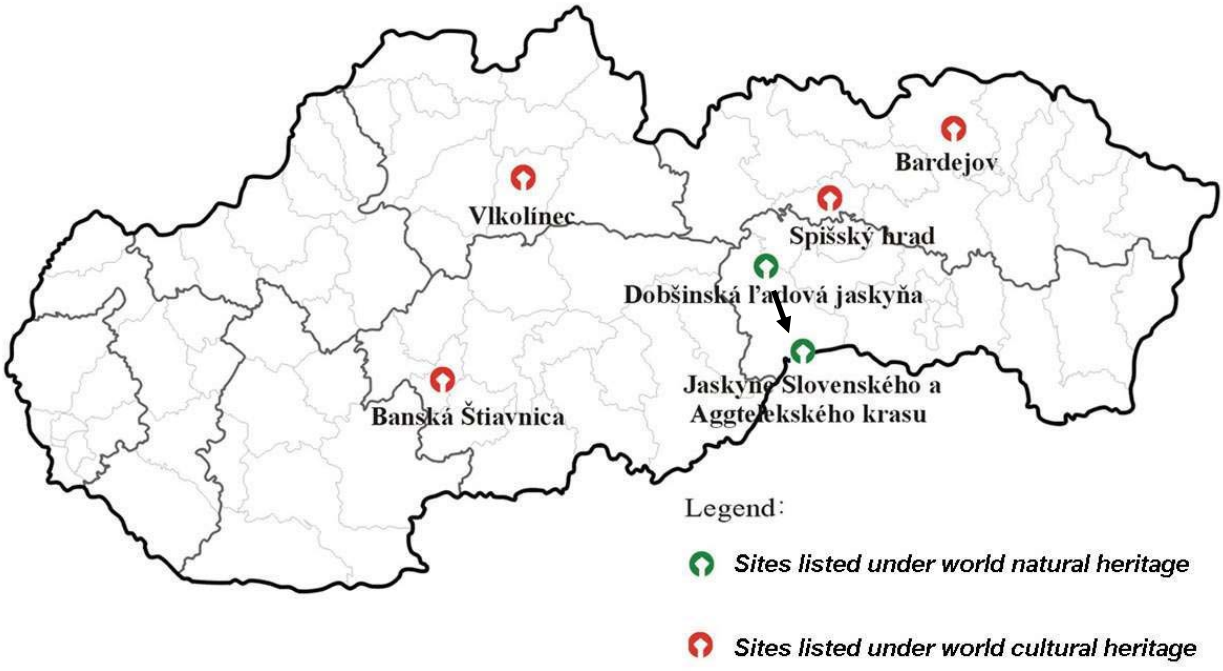
Under cultural heritage:

- **Vlkolínec** Folk Architecture Reserve, local district of Ružomberok (Cartagena, 1993),
- **Spišský castle** and cultural monuments in its surroundings in protective zone of NCM - Spišská Kapitula, Spišské Podhradie, Church of the Holy Ghost in Žehra (Cartagena, 1993),
- **Banská Štiavnica** with neighbouring technical monuments (Banská Štiavnica, Hodruša–Hámre, Štiavnické Mines, Banská Belá, Voznica, Vyhne, Banský Studenec, Počúvadlo, Kopanica, Kysihýbel, Antol, Ilija; especially 23 water dams - tajchas) (Cartagena, 1993),
- Historical Town Reserve of **Bardejov** also with the protective zone**,** including the Jewish suburb (Cairns, 2000).

Under natural heritage:

- **Caves of the Slovak and Aggtelek karts** (Berlín, 1995), to which was added **Dobšinská ice cave** in 2000, including Stratenská cave and Psie diery cave as a one cave system in Duča hill (Cairns, 2000),

World cultural and natural heritage in the SR



Source: MoE SR

Comparison of the number of World Heritage sites (WH) with the surrounding countries to 2005

Country	Number of WH sites
Slovakia	5
Czech republic	12
Poland	12
Hungary	8
Austria	8

Source: UNESCO

Sites proposed to be placed on the World Heritage List

The **proposed sites** to be placed **on the list for nomination to the world heritage** include:

Under cultural heritage

1. **Tokay vineyard area** (Černov, Veľká Tàňa, Malá Tàňa, Slovenské Nové Mesto, Černochov, Bara, Viničky; inclusion into the Tokay vineyard area in Hungary),
2. **Wooden sacral architecture in the Carpathians** (planned common proposal with Poland, Hungary, and Ukraine),
3. **Monument to Chatam Sófer** in Bratislava,
4. **Gemer and abovské churches with medieval wall paintings** (planned project with Hungary),
5. **Limes Romanus – Roman monuments on the middle Danube** (together with Austria, Hungary, in Slovakia only Iža and Rusovce),

6. **Komárno – fortification against the Turks** (together with Hungary),
7. **Historic Centre of Košice** (lens-shaped square),
8. **Monuments and landscape of Spiš** (the area around Spišský castle and the surrounding world heritage monuments – with added historical centre of Levoča and the work of the Master Paul).

Under nature heritage

1. **Carpathian primeval forests**,
2. **Nature reserves of the Tatras** (together with Poland),
3. **Karst valleys of Slovakia** (addition to proposal on the Gorge of Slovak Paradise),
4. **Danubian nature and cultural landscape** (planned common proposal with the Czech Republic, Austria, and Hungary),
5. **Nature reserves of the Považie region,**
6. **Mycoflora of the Bukovské hills,**
7. **Geyser in Herľany.**

Spatial planning *systematically and comprehensively solves the spatial arrangement and functional use of the territory, sets it principles, proposes the material and time coordination of activities influencing the environment, ecological stability, cultural and historical values of the territory, regional development and landscape formation in line with the principles of sustainable development.*

§ 1 of the Act No. 50/1976 Coll. on Spatial Planning and Building Order (Building Act) as subsequently amended

• SPATIAL DISTRIBUTION AND FUNCTIONAL USE OF TERRITORY

Settlement and demographic trend

Since 2003, there has been a rising trend in reproduction potential, birthrate is increasing, number of abortions have dropped, and the number of immigrants has also increased.

Total increament compared to the previus year was 4 358 inhabitants, mainly due to immigration. As of December 31, 2005, population count in the Slovak Republic reached the number of **5 389 180**. There was **natural increment** in population count, which builds on the positive trend from 2004 that was preceded by a three-year reduction. (2001-2003) Of all the regions, most inhabitants live in the Prešov region, least in the Trnava region.

Basic data about the migration of population in the SR (2005)

Territory	Live births	Dead	Natural increment (loss)	Migration increment (loss)	Total increment (loss)	Number of inhabitants (to 31st December 2005)
Bratislavský region	5 872	5 920	-48	2 615	2 567	603 699
Trnavský region	4 954	5 460	-506	1 480	974	554 172
Trenčiansky region	5 093	6 044	-951	-55	-1 006	600 386
Nitriansky region	6 110	7 941	-1 831	979	-852	708 498
Žilinský region	7 118	6 628	490	144	634	694 763
Banskobystrický region	6 418	7 300	-882	-367	-1 249	657 119
Prešovský region	9 770	6 795	2 975	-1 124	1 851	798 596
Košický region	9 095	7 387	1 708	-269	1 439	771 947
Slovak Republic	**54 430**	**53 475**	**955**	**3 403**	**4 358**	**5 389 180**

Source: SO SR

Demographic trend of the 90-ties and the beginning of this century in Slovakia reflects changes that occur in the economic, social, and political transformation of the society.

Structure of the settlement in the SR (to 31st December 2005)

Territory	Area (km²)	Number of inhabitants per km²	Number of independent municipalities	Average number of inhabitants per municipalities	Urbanization level (%)	
					Urban area	Rural area
Bratislavský region	2 053	294	73	8 270	83.15	16.85
Trnavský region	4 147	134	251	2 208	49.35	50.65
Trenčiansky region	4 502	133	276	2 175	57.26	42.74
Nitriansky region	6 343	112	354	2 001	47.34	52.66
Žilinský region	6 808	102	315	2 206	50.72	49.28
Banskobystrický region	9 455	69	516	1 273	53.84	46.16
Prešovský region	8 974	89	666	1 199	49.13	50.87
Košický region	6 752	114	440	1 754	56.17	43.83
Slovak Republic	**49 034**	**110**	**2 891**	**1 864**	**55.42**	**44.58**

Source: SO SR

Index trend in the SR area structure

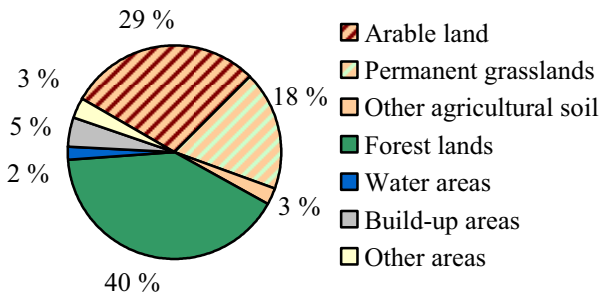
SR is the balanced mosaic composed from the urbanized settlements environment, agricultural and forest countryside, which plays also the production and restoration function for small and larger settlements in Slovakia. Within transformation of the national economy there continually comes to **natural shift of land** between agricultural and forest land and other land categories.

Overall land categories to 31st December 2005 (ha)

Region	Arable land	Hop-field	Vineyard	Gardens	Orchards	Permanent grasslands	Agricul. land	Forest lands	Water areas	Built-up areas	Other areas	Total area
BA	75 183	0	4 655	4 514	1 101	9 869	95 322	75 244	5 560	15 257	13 879	205 262
TT	263 727	130	4 308	8 163	2 478	14 801	293 607	65 253	14 691	27 215	13 952	414 718
TN	98 724	372	68	8 149	2 607	76547	186 467	220 531	6 305	23 019	13 867	450 190
NR	406 904	36	12 164	14 240	5 057	31 085	469 485	96 118	15 675	37 458	15 605	634 341
ZA	63 274	0	0	6 142	403	176 450	246 268	378 482	12 795	24 999	18 295	680 839
BB	166 635	0	3 304	11 182	1 959	235 628	418 708	462 547	7 901	32 952	23 369	945 477
PR	150 243	0	23	10 927	2 198	221 767	385 160	440 455	14 112	31 210	26 511	897 448
KE	204 349	0	2 785	13 549	2 143	115 136	337 963	266 604	16 341	34 147	20 137	675 192
Total	**1 429 040**	**538**	**27 307**	**76 865**	**17 947**	**881 283**	**2 432 979**	**2 005 234**	**93 381**	**226 257**	**145 616**	**4 903 467**

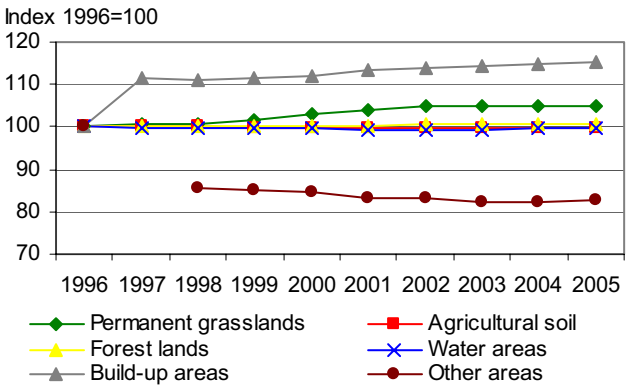
Source: IGCC SR

Areas structure in the SR (2005)



Source: IGCC SR

Index trend in areas structure of SR



Source: SO SR

Green in the residential areas

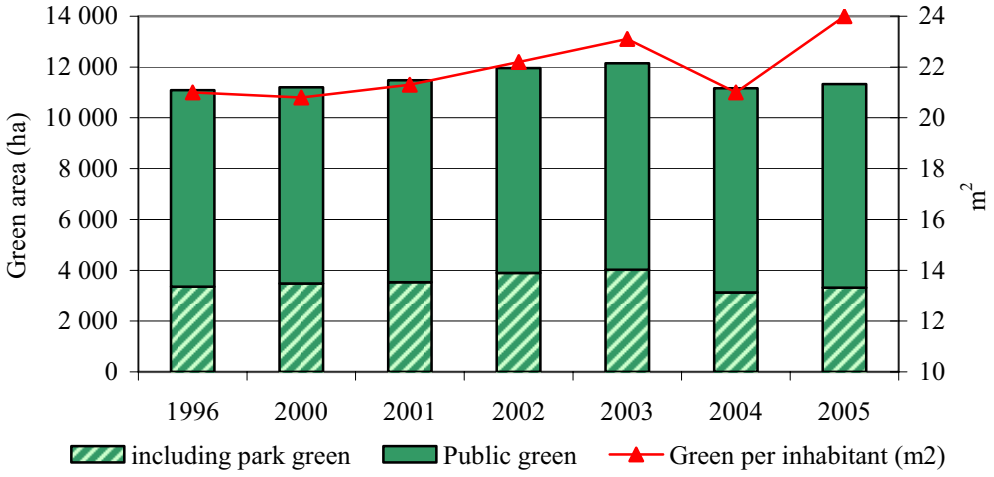
Green belongs to the most effective spatial, protective, healing and even decorative element.

Area of municipal green of the SR by regions (2005)

Region	Public green (ha)		including park green (ha)		Green per inhabitant (m^2)	
	towns and villages	including towns	towns and villages	including towns	towns and villages	including towns
BA	1 237	1 018	333	237	20	20
TT	1 328	715	430	178	26	24
TN	1 183	827	341	205	24	20
NR	1 913	937	599	186	28	27
ZA	1 167	713	260	133	20	17
BB	1 512	951	468	303	27	23
PR	1 330	837	388	207	21	17
KE	1 664	1 060	489	217	24	22
Total	**11 334**	**7 057**	**3 308**	**1 666**	**24**	**21**

Source: SO SR

Trend of public green in SR



Source: SO SR

Trend in the public greenery size over the last years was positive, notwithstanding its decrease in 2004. The highest size numbers come from the Nitra region; however, most urban greenery (without rural) is in the Košice region.

Spatial planning

Act No. 50/1976 Coll. on spatial planning and building code as amended is the main legal instrument for spatial planning and building code. Currently, there is being prepared a new legislation on spatial planning and building code.

Public administration authorities are required to respect the approved spatial distribution and functional use of territory in all their activities. Further, they must ensure that the territory is

developed proportionally in order to maintain its sustainable development; they have to exploit natural sources with caution, and protect natural and cultural heritage.

Main document of spatial planning in the Slovak Republic is the Strategy of Spatial Development of Slovakia, which looks over the horizon of 15 to 20 years. **The Conception of Spatial Development of Slovakia 2001 (KURS 2001)** was approved by the SR Government. Ministry of construction and regional development of the SR that elaborates the strategy is also responsible for its periodical revisions.

Conception of Spatial Development of Slovakia 2001:

- **addresses** spatial distribution and functional use of the SR territory, not only in relation to international aspects, but also in terms of Slovak national interests with controlling the development of individual Slovak regions. Concept of links to the European residential network not only builds on the acceptance and acknowledgement of current European strategies of residential network development or strategies of the neighbouring countries, but also on its own visions of linking and utilisation of the Slovak residential structure within the Central European spatial framework,
- **sets** the hierarchy and spatial distribution of the residential structure - development of the main urbanisation axes, centres and settlement centres,
- **determines** principles of directing the spatial development with the goal to create equal living conditions throughout the whole Slovak territory, create territorial conditions for economic and social development of territory, improve the environment, and protect nature and her resources.

KURS 2001 principles of spatial planning are binding for the whole planning system of Slovakia and must be reflected also into the sets of measures of systematic and substantive character, such as legal regulations, proposals for various activities, development programmes and proposals for public investments as viewed by the central government authorities.

Since 2002, self-governing regions elaborate territorial plans **on the regional level. Territorial plans of large territorial units** for individual Slovak regions were approved by the SR government resolutions in 1998.

Municipalities are responsible for activities related to spatial planning at the **local level.** Pursuant to the Building Act, any municipality with more than 2 000 inhabitrants must develop and approve the **municipal territorial plan.** In 2005, activities related to physical planning became more intense as municipalities needed to create teritorial conditions for their development. The obligatory part of the municipal territorial plan must be in accordance with the binding section of the regional territorial plan.

European Landscape Convention

European Landscape Convention represents a European Board's Convention **focuses on landscape protection, management, and planning.** It became effective after its ratification by ten countries on March 1, 2004. Through this Convention, the Member states created an instrument directed on the quality and diversity of the European landscape, in order to secure its protection, management, and planning. By attaching their signatures to the Convention, they declare to consider landscape as part of

the European natural and cultural heritage that contributes to the strengthening of the European identity, and contributes to the creation of local cultures.

The Convention was signed in Slovakia on May 30, 2005, its ratification took place on August 9, 2005. **The Convention became effective in Slovakia on December 1, 2005.**

Objective of the European Convention on Landscape is to support landscape protection, management, and planning (for all types of countries in Europe) and organise European cooperation in this area. The signatory binds itself to:

- legally acknowledge landscape as the basic component of population environment, as an expression of diversity of social, cultural, and natural heritage and the basis of its identity;
- introduce and implement landscape strategies to protect, manage, and plan landscape through adopting specific measures directed to increase awareness on landscape value, its role and changes, and to educate specialists to assess the landscape and activities therein, multi-subject education, as well as educational programmes of schools and universities in the area of landscape strategies, protection, management, and planning.
- identify and assess landscapes, define landscape types on the whole of its territory, set the target quality level for individual identified and evaluated landscape types, implement landscape strategies by introducing measures for landscape protection, management, and planning.

Implementation programme of the European Landscape Convention in the Slovak Republic focuses on four main points:

Point 1: Institutional support - preparation of the needed legislation on landscape planning

Point 2: Campaigns - ensure information campaigns, public involvement, cooperation with the media, and training of specialists.

Point 3: Exchange of information - ensure cooperation on national and international level. Preparation of the list of contacts, creation of the network of experts and institutions, and closer cooperation among the V4 countries.

Point 4: Professional assistance - identification of landscape types, typical landscape features, major landscape components, target landscape quality, etc.

MoE SR is the competent authority for coordination and management of obligations and cooperation with the affected resorts within the European landscape convention. SEA (Slovak Environment Agency) is the executive authority for the MoE SR.

Village Renewal Program

Village Renewal Program (VRP) is one of the popular and successful instruments for rural development in developed European countries. Countries and regions that are part of the European working community for village renewal and rural development (with headquarters in Vienna) have been

applying this instrument for more than 20 years. **Slovakia** has been a member of this community through its Ministry of Environment since 1997, and has been implementing this Program since 1998.

Main objective of the VRP is to create organisational and economic conditions to foster activities and support urban and rural populations to improve their environment, preserve natural and cultural values of rural landscape, and to develop environment-friendly management of domestic resources. This is implemted by **SEA** that receives applications from municipalities and rural micro-regions to support their activities, organises a national contest called The Village of the Year, and officially represents the Resort before international organisations.

Beside the indirect support, the Program also provides for **financial form of government support** - this is a system of small subsidies, typically several tens of thousand SKK per municipality.

The Program created a space for local development within the EU conditions – implements and develops the principles of regional and structural strategy, Local Agenda 21, and actively contributes to rural development. Also, the Program introduces a higher-quality environment – mainly public places and objects, which creates conditions for further development of rural tourism, and raises public environmental awareness.

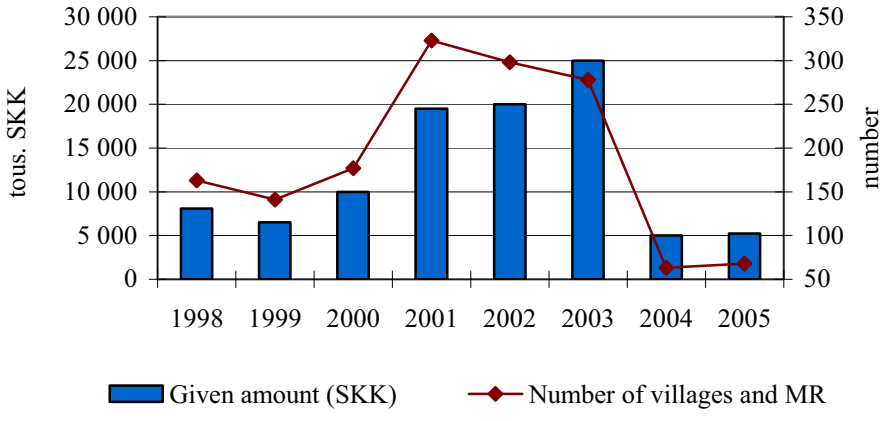
In 2005, the VRP support was **the lowest,** reaching the value of **5.23 mil. SKK.**

Overview of allocating the subsidies to VRP in 2005 (SKK)

1/ studies, project documentations and SD programmes *		2A/ small realizations		2B/ edification and advertising		Total of 1 - 2	
Number of villages and MR**	Given amount	Number of villages	Given amount	Number of villages	Given amount	Number of villages	Given amount
16	1 302 000	47	3 388 000	5	540 000	**68**	**5 230 000**

* SD – sustainable development ** MR – micro-regions Source: SEA

Trend in given amount for VRP



Source: SEA

Every two years since 1990, *European Working Community for Rural Development and Village Renewal* (ARGE) organises a competition for the **"European Award for Village Renewal"**. For the

first time ever, in 2002, Slovakia sent its representative – winner of the national competition called **„Village of the Year".** It was the Soblahov village from the district of Trenčín, while in 2004 it was the village of Hrušov from the district of Veľký Krtíš that had won the competition in 2003.

Character of criteria and evaluation in the national competition Village of the Year is always organised within the European context. The main evaluation criteria include uniqueness and originality of approaches and thinking patterns of inhabitants and users in the village as they carry out sustainable development activities. Meanwhile, they try to preserve typical features and their unique personality.

There were 13 villages from the whole of Slovakia that registered for the competion **in 2005.** Thus, the villages took advantage of this great opportunity to present their achievements, beauties, and uniqueness of the Slovak village. The village of **Vlachovo** in the district of Rožňava became the **winner** of the competion **"Village of the Year 2005".** In 2006, this village will represent Slovakia in the European Village Renewal Award competition.

*The territory cannot be burdened by human activities over the bearable limit of load. The admissible **level of environment pollution** is given by threshold limits, specified by special regulations; these limits shall be specified in accord with the stage of knowledge, so that neither health of people, nor other living organisms and other elements of environment are threatened.*

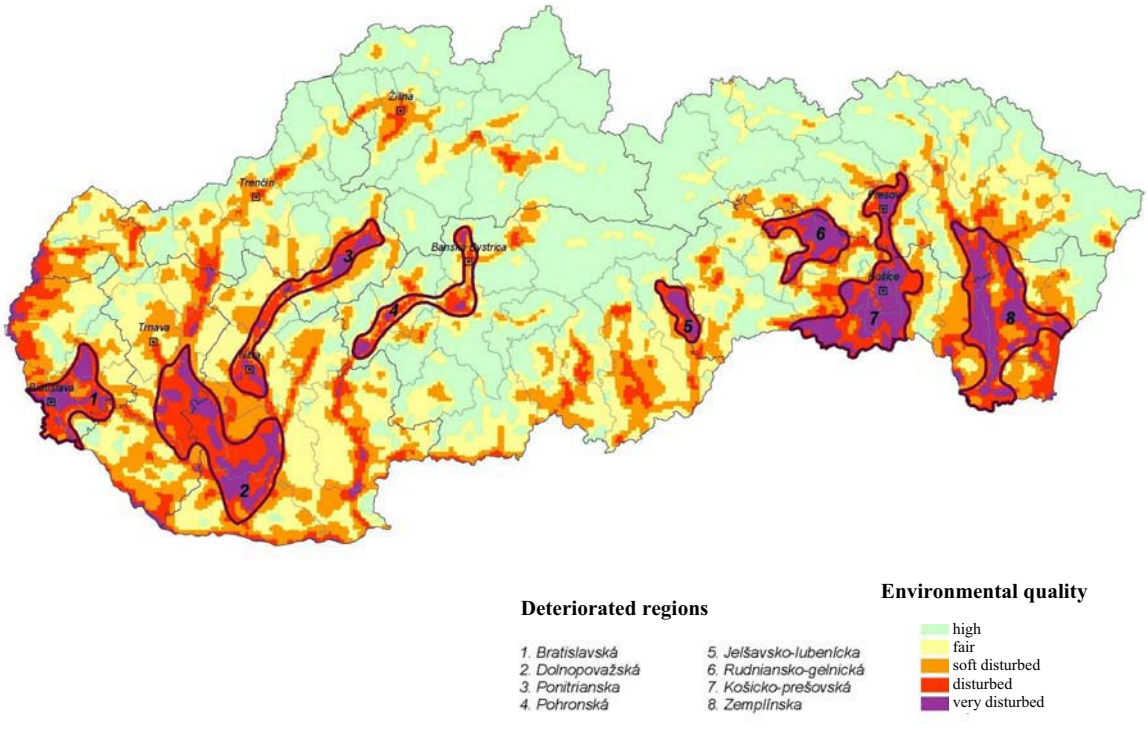
§ 11 of the Act No. 17/1992 Coll. on Environment

ENVIRONMENTAL REGIONALISATION OF SR AND LOADED AREAS

• ENVIRONMENTAL REGIONALISATION OF THE SLOVAK REPUBLIC

The area of the SR is, in the frame of **environmental regional classification** evaluated in 5 grades of quality of the environment, according to which there are identified environmentally most **loaded areas**.

Quality of the environment and the loaded areas



Source: SEA

Basic parameters of the loaded areas

Loaded area	*Area of km^2	Number of inhabitants	Position in frame of regions – rate in %
Bratislavská	488	432 000	Bratislava 93 %, Trnava 7 %
Lower-Považie	1 261	247 000	Nitra 66 %, Trnava 34 %
Ponitrianska	450	272 000	Nitra 51 %, Trenčín 49 %
Pohronská	203	186 000	Banská Bystrica 100 %
Jelšavsko-lubenícka	137	21 000	Banská Bystrica 100 %
Rudniansko-gelnická	357	52 000	Košice 95 %, Prešov 5 %
Košicko-prešovská	1 044	425 000	Košice 81 %, Prešov 19 %
Zemplínska	1 040	173 000	Košice 83 %, Prešov 17 %
Total	**4 980**	**1 808 000**	

Source: SEA

** In area of km^2 is included 5th and 4th grade of quality of the environment.*

The smog regulation system *is a set of measures taken for a limited time to regulate sources, which in a crucial way participate in air pollution. The smog regulation system shall be set up in* ***areas of controlled air quality*** *with the possible smog getaway, where deterioration of air quality is caused by pollutants, for which information threshold limits and warning threshold limits have been specified.*

§ 13 par. 2 and 3 of the Act No. 478/2002 Coll. on Air Protection ...

• LOADED AREAS

The Bratislava loaded area

- **Air pollution**

Air pollution is mainly caused by activities of industrial enterprises, especially mechanical engineering, chemical, civil engineering, automobile industry and traffic, and air pollution is rising each year. Of all monitored pollutants, particulate matter and nitrogen oxides play major role in the high level of air pollution.

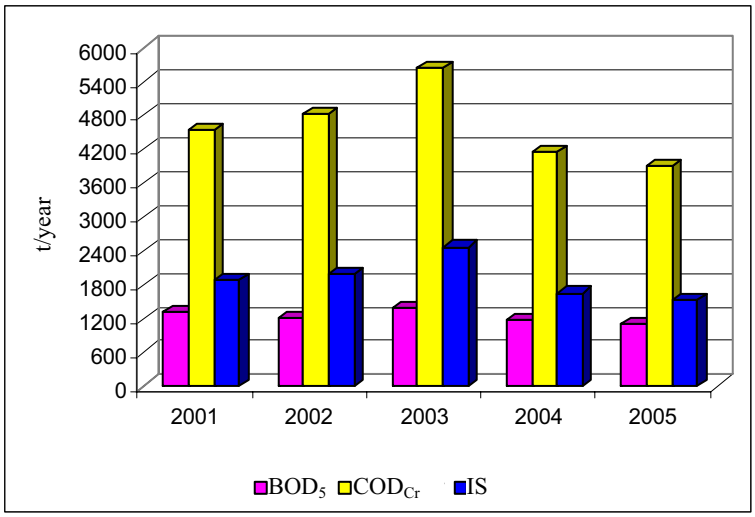
The most significant stationary sources o fair pollution in Bratislava loaded area and their emissions of basic polluting substances (BPS) in 2004 (t/year)

Operator	TZL	SO_2	NO_x	CO
1. SLOVNAFT, Inc., Bratislava	309.478	9 671.910	3 768.397	721.752
2. Paroplynový cyklus, Inc., Bratislava	20.486	2.458	460.169	45.935
3. VOLKSWAGEN SLOVAKIA, Inc., Bratislava	14.368	0.321	57.174	20.048
4. Odvoz a likvidácia odpadu, Inc., Bratislava	1.409	2.201	177.272	13.839
5. ISTROCHEM, Inc., Bratislava	0.189	127.561	1.289	26.873
6. Bratislavská teplárenská, Inc., tepláreň II, Bratislava III	5.108	0.613	112.367	37.669
7. HOLCIM (Slovensko), Inc., Rohožník	88.571	190.745	1 217.574	1 044.461

Source: SHMI

- **Water pollution**

The trend of discharged pollution from the significant sources of water pollution in Bratislava loaded area (t/year)



Source: SHMI

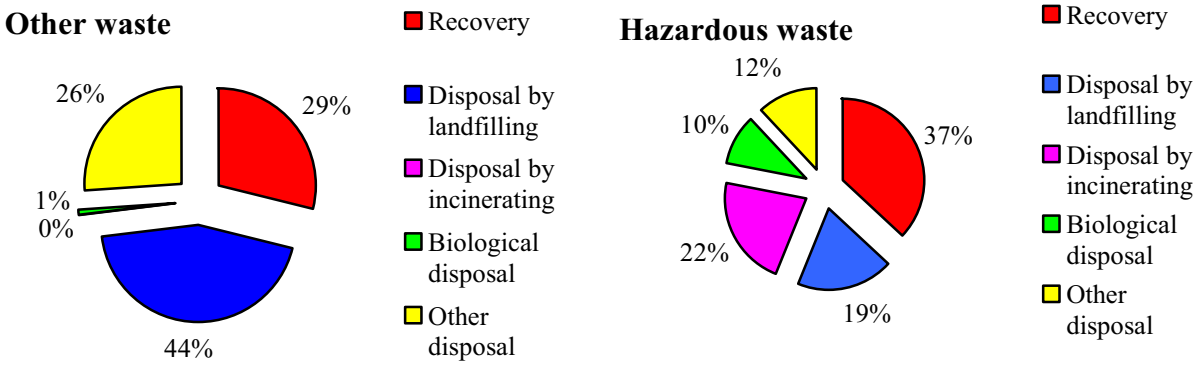
Surface water quality in Bratislava loaded area

Water source	Sampling point	Groups of indicators and quality classes					
		A	B	C	D	E	F
Dunaj	Karlova Ves	II	III	III	III	IV	V
	Bratislava L.B.	II	III	III	III	IV	V
	Bratislava stred	II	III	II	III	IV	V
	Bratislava P.B.	II	II	II	III	IV	V
	Rajka	I	II	II	III	IV	I
Priesakový kanál	Čunovo	II	II	II	III	II	I
Mošonské rameno	Štátna hranica	I	II	II	III	IV	I
Malý Dunaj	Bratislava	I	II	II	III	III	IV
	Malinovo	I	II	IV	III	III	IV

Source: SHMI

- **Waste management**

The way of waste disposal in Bratislava loaded area



Source: SEA

Source: SEA

The Lower - Považie loaded area

- **Air pollution**

Major air polluters in this territory include chemical, food, and cellulose – paper producing industry. Local heating houses and sites also worsen air quality.

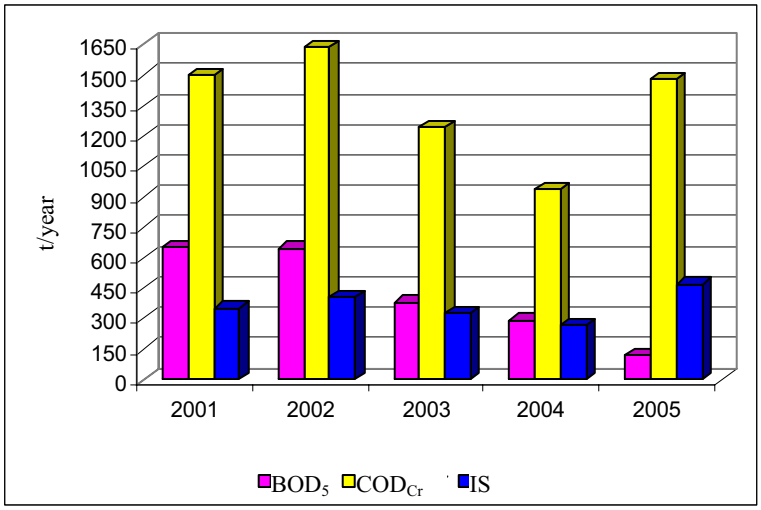
The most significant stationary sources o fair pollution in Lower-Považie loaded area and their emissions of basic polluting substances (BPS) in 2004 (t/year)

Operator	SPM	SO_2	NO_x	CO
1. Duslo, Inc., Šaľa	280.133	932.085	789.514	114.200
2. Slovenské cukrovary , Inc., operation Sereď	8.832	285.053	91.464	9.369
3. KAPPA, Inc., Štúrovo	58.618	898.576	824.428	168.536

Source: SHMI

- **Water pollution**

The trend of discharged pollution from the significant sources of water pollution in Lower-Považie loaded area (t/year)



Source: SHMI

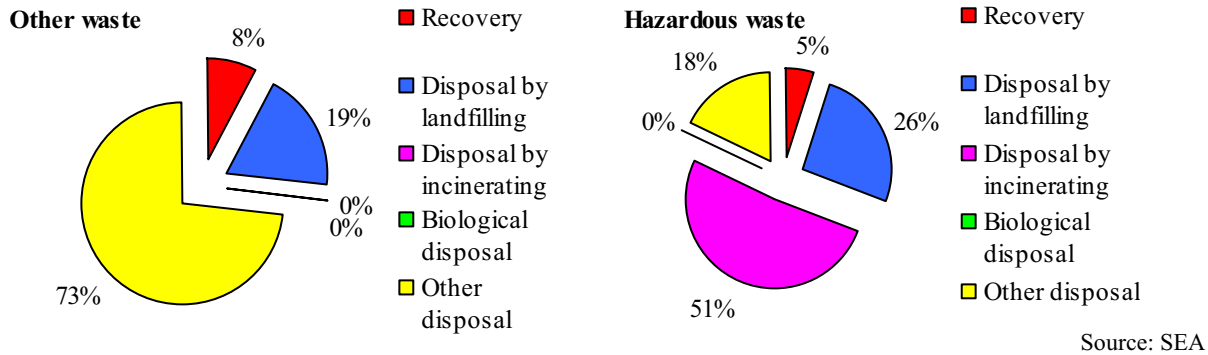
Surface water quality in Lower-Považie loaded area

Water source	Sampling point	Groups of indicators and quality classes					
		A	B	C	D	E	F
Váh	Nad Sereďou	II	II	V	II	III	I
	Selice	II	III	III	III	III	V
	Kolárovo	I	II	III	II	III	III
Trnávka	Modranka	V	III	V	III	IV	V
Dolný Dudváh	Sládkovičovo	III	IV	V	IV	V	V
Žitava	Dolný Ohaj	IV	IV	V	III	IV	V
Malá Nitra	Pod Šuranmi	III	IV	V	IV	IV	V
Nitra	Komoča	IV	IV	V	IV	V	IV

Source: SHMI

- **Waste management**

The way of waste disposal in Lower-Považie loaded area



Source: SEA

Source: SEA

The Ponitrie loaded area

- **Air pollution**

Air quality is impacted mainly by power industry, natural gas transport, chemical industry, mining and processing of minerals, and leather-processing industry. Air pollution in this territory is caused by low quality of fuel-energy sources that utilize coal with higher content of sulfur and arsenic. Local heating houses contribute to the impaired air quality.

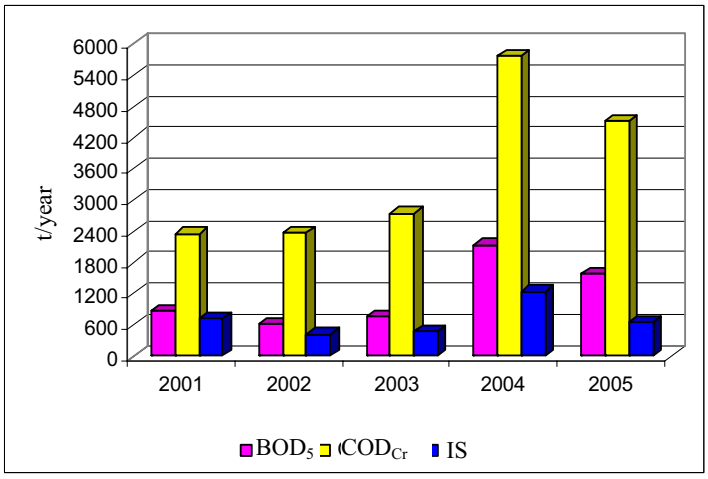
The most significant stationary sources o fair pollution in Ponitrie loaded area and their emissions of basic polluting substances (BPS) in 2004 (t/year)

Operator	SPM	SO_2	NO_x	CO
1. SPP, Inc., Bratislava, enterprise Ivanka pri Nitre	0.055	0.283	1 222.189	124.321
2. SE,Inc., Bratislava, OZ ENO, Zemianske Kostoľany	673.404	41 768.330	5 339.049	493.862
3. Novácke chemické závody, Inc., Nováky	989.069	9.669	160.746	75.441
4. CALMIT, Ltd., Žirany	82.210	3.233	6.571	785.394
5. KVARTET, Inc., Partizánske	135.933	453.110	97.095	323.650

Source: SHMI

- **Water pollution**

The trend of discharged pollution from the significant sources of water pollution in Ponitrie loaded area (t/year)



Source: SHMI

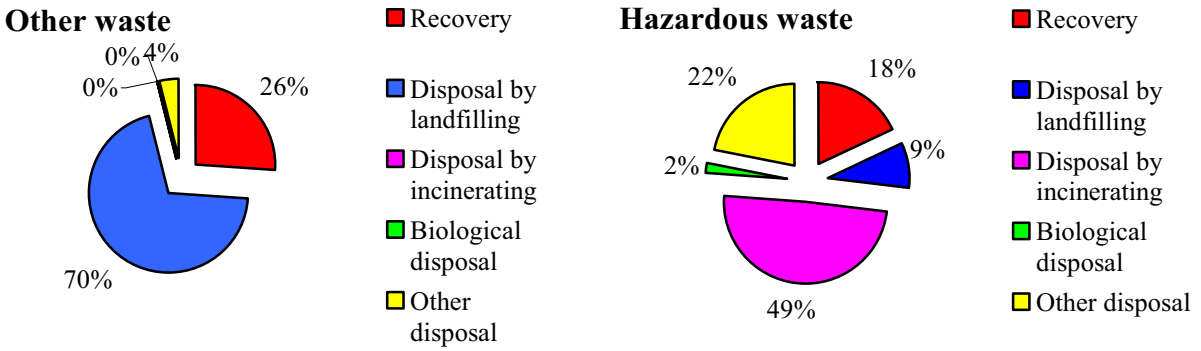
Surface water quality in Ponitrie loaded area

Water source	Sampling point	Groups of indicators and quality classes					
		A	B	C	D	E	F
Nitra	Opatovce nad Nitrou	III	II	IV	III	V	
	Chalmová	IV	V	V	IV	V	V
	Nitrianska Streda	V	IV	V	IV	V	V
	Lužianky	III	IV	IV	IV	V	V
	Čechynce	IV	IV	V	IV	V	V
Handlovka	Koš	V	III	V	IV	V	V
Nitrica	Partizánske	II	II	IV	III	III	IV
Bebrava	Krušovce	III	III	V	IV	V	IV

Source: SHMI

- **Waste management**

The way of waste disposal in Ponitrie loaded area



Source: SEA

Source: SEA

The Pohronie loaded area

- **Air pollution**

Air quality in the assessed territory is impacted by existing large-size, middle-size, and small-size air pollution sources, as well as by the automobile industry. Aluminum production and wood-processing industry play major role in air quality. Local heating houses contribute to the overall impaired air quality.

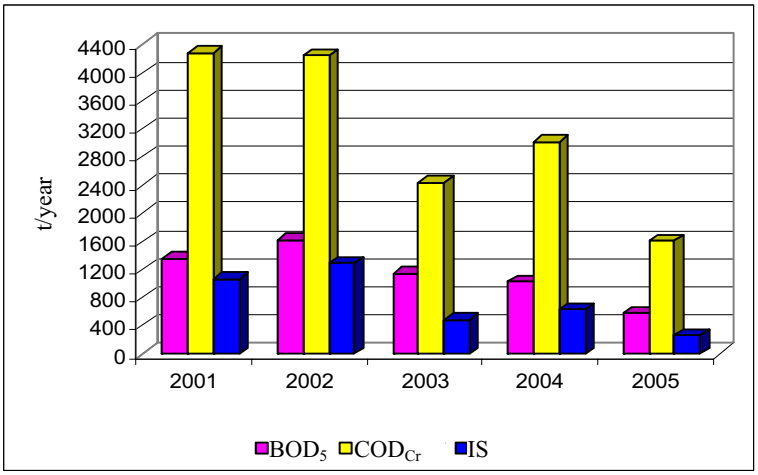
The most significant stationary sources o fair pollution in Pohronie loaded area and their emissions of basic polluting substances (BPS) in 2004 (t/year)

Operator	SPM	SO_2	NO_X	CO
1. SLOVALCO, Inc., Žiar nad Hronom	103.963	1 376.263	541.013	13 009.671
2. Zvolenská teplárenská, Inc., Zvolen	28.675	2 118.633	508.571	36.642
3. ZSNP, Inc., Žiar nad Hronom	28.803	440.049	225.643	443.523
4. BUČINA, Inc, Zvolen	59.255	1.330	80.673	47.878
5. ANB, Inc., operation Žarnovica	26.252		37.215	22.037

Source: SHMI

- **Water pollution**

The trend of discharged pollution from the significant sources of water pollution in Pohronie loaded area (t/year)



Source: SHMI

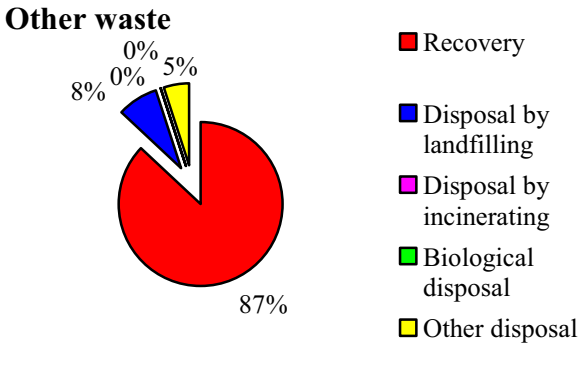
Surface water quality in Pohronie loaded area

Water source	Sampling point	Groups of indicators and quality classes					
		A	B	C	D	E	F
Hron	Banská Bystrica	II	II	II	III	V	III
	Sliač	IV	II	III	III	V	III
	Budča	III	I	III	III	V	IV
	Žiar nad Hronom	II	II	III	III	V	IV
	Žarnovica	II	II	III	III	V	IV
Bystrica	Banská Bystrica	IV	II	III	IV	IV	IV
Zolná	Ústie	III	II	III	IV	V	V
Neresnica	Ústie	II	II	IV	II	IV	III
Slatina	Ústie	III	II	IV	III	IV	V

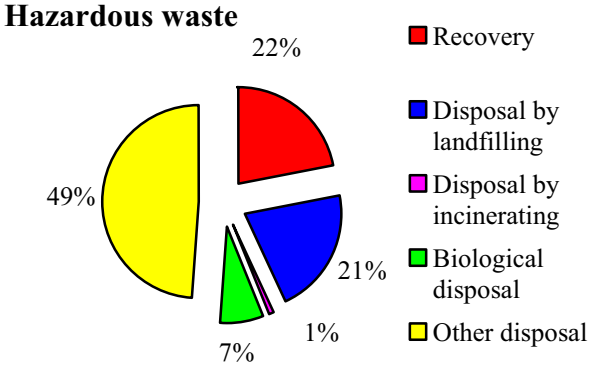
Source: SHMI

- **Waste manegament**

The way of waste disposal in Pohronie loaded area



Source: SEA



Source: SEA

Jelšava-Lubeník loaded area

- **Air pollution**

Air pollution is caused mainly by mining activities and magnesite processing activities in this area. Summary air pollution is caused also by local heating houses.

The most significant stationary sources o fair pollution in Jelšava-Lubeník loaded area and their emissions of basic polluting substances (BPS) in 2004 (t/year)

Operator	SPM	SO_2	NO_x	CO
SLOVMAG, Inc., Lubeník	55.405	191.107	284.136	2 576.974
Slovenské magnezitové závody, Inc., Jelšava	85.143	248.308	874.961	1 845.266

Source: SHMI

- **Water pollution**

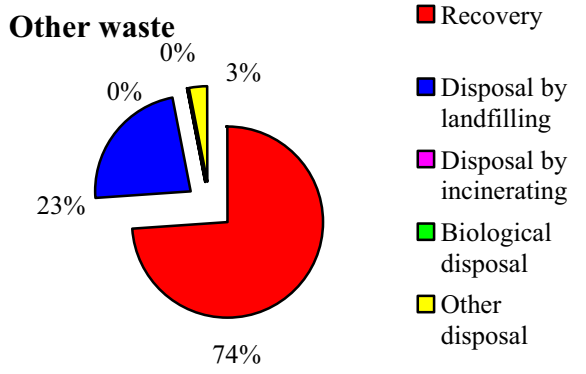
Surface water quality in Jelšava-Lubeník loaded area

Water source	Sampling point	Groups of indicators and quality classes					
		A	B	C	D	E	F
Muráň	Bretka	II	II	III	II	IV	IV

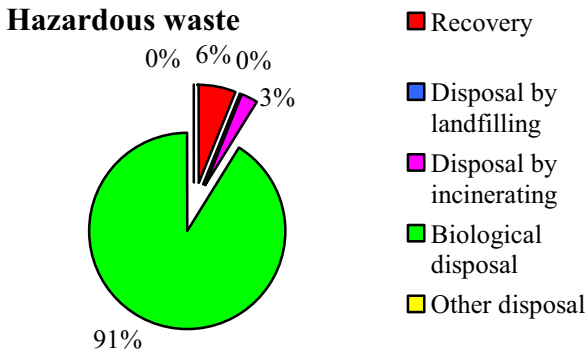
Source: SHMI

- **Waste management**

The way of waste disposal in Jelšava-Lubeník loaded area



Source: SEA



Source: SEA

The Rudnianska-gelnická loaded area

- **Air pollution**

Copper production and lime processing industry play major role in local air pollution, which at increased production has an impact on the air pollution load of the territory. These air pollution sources couple also with corporate and local heating systems – local heating houses.

The most significant stationary sources o fair pollution in Rudniansko-gelnická loaded area and their emissions of basic polluting substances (BPS) in 2004 (t/year)

Operator	SPM	SO_2	NO_x	CO
1. KOVOHUTY, Inc., Krompachy	8.143	122.316	6.514	1 064.146
2. Calmit, Ltd. Bratislava, operation Margecany	19.545	1.695	1.678	1 050.272
3. Zlievareň SEZ Krompachy, Inc. Krompachy	3.711	2.502	2.732	325.387

Source: SHMI

- **Water pollution**

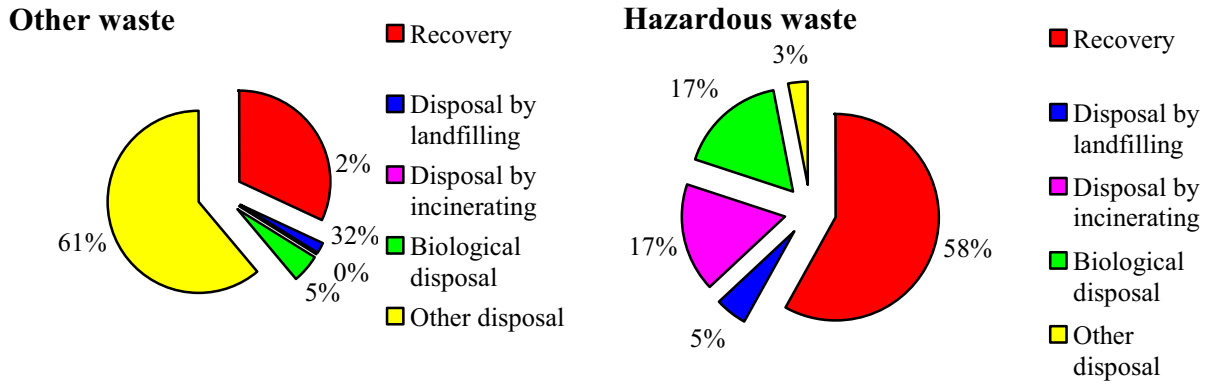
Surface water quality in Rudniansko-gelnická loaded area

Water source	Sampling point	Groups of indicators and quality classes					
		A	B	C	D	E	F
Hornád	Pod Spišskou N. Vsou	IV	II	IV	II	IV	III
	Kolinovce	III	III	IV	II	IV	III
	Pod Kluknavou	V	IV	IV	II	IV	IV
Rudniansky p.-2	Ústie	I	III	III	II	IV	V
Slovinský p.	Ústie	I	III	III	II	V	III
Smolník - 1	Ústie	I	V	II	II	II	V
Hnilec	Pod Mníškou	II	I	II	II	IV	III
	Prítok do VN Ružín	I	I	III	II	IV	III

Source: SHMI

- **Waste management**

The way of waste disposal in Rudniansko-gelnická loaded area



Source: SEA

Source: SEA

The Košice-Prešov loaded area

- **Air pollution**

Heavy industry, including mainly the smalting and power industries, is the major air polluter in this territory. Extraction and processing of minerals produce high volumes of emissions. It is the wood-processing industry that impacts the air pollution situation in Prešov.

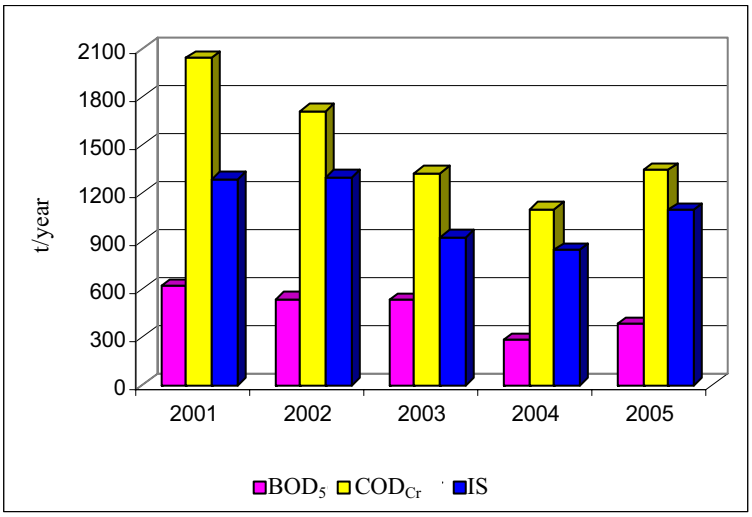
The most significant stationary sources o fair pollution in Košice-Prešov loaded area and their emissions of basic polluting substances (BPS) in 2004 (t/year)

Operator	SPM	SO_2	NO_x	CO
1. U. S .Steel, Ltd., Košice	6 347.626	11 282.364	9 091.781	106 700.446
2. TEKO, Inc., Košice	82.965	1 531.450	1 570.180	71.210
3. Carmeuse Slovakia, Ltd., Košice	203.976	19.321	122.159	110.702
4. SZM Jelšava, Inc., division Bočiar	20.003	108.912	118.221	112.134
5. V.S.H., Inc., Turňa nad Bodvou	32.476	9.379	576.170	87.201
6. SIDERIT, Ltd., Nižná Slaná	64.111	2 451.838	78.222	140.636
7. Kronospan Slovakia, Ltd., Prešov	136.995	0.031	173.681	692.519
8. Posádková správa budov Prešov	0.516	5.044	3.431	19.006

Source: SHMI

- **Water pollution**

The trend of discharged pollution from the significant sources of water pollution in Košice-Prešov loaded area (t/year)



Source: SHMI

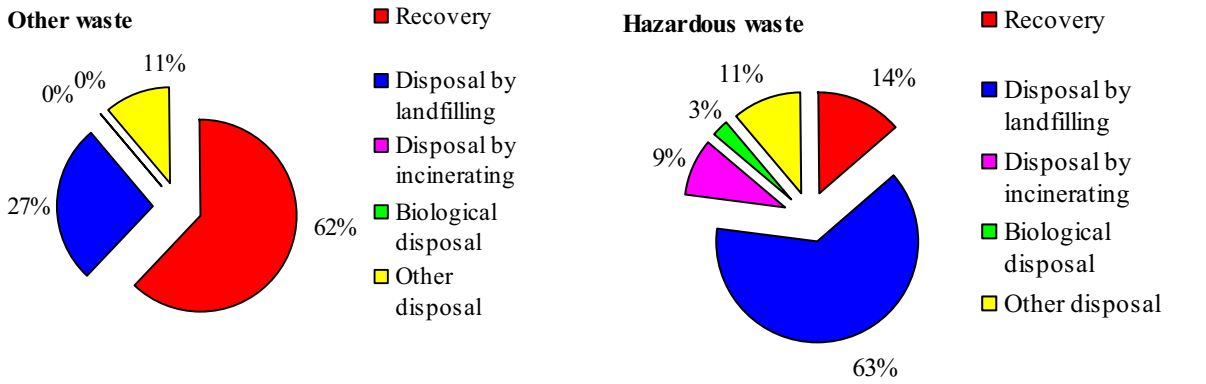
Surface water quality in Košice-Prešov loaded area

Water source	Sampling point	Groups of indicators and quality classes					
		A	B	C	D	E	F
Hornád	Krásna nad Hornádom	III	II	III	II	IV	
	Žďaňa	IV	IV	IV	I	IV	V
	Hidasnémeti	V	V	IV	II	V	IV
Torysa	Kendice	IV	III	IV	II	IV	IV
	Košické Olšany	IV	III	IV	II	IV	
Svinka	Obišovce	III	III	III	II	IV	V
Sekčov	Ústie	III	III	III	II	IV	IV
Sokoliansky p.	Tornyosnémeti	II	IV	V	II	V	IV
Ida	Ústie	V	II	III	II	IV	III
Turňa	Ústie	III	II	III	III	IV	III
Bodva	Hosťovce	V	IV	IV	II	V	IV

Source: SHMI

- **Waste management**

The way of waste disposal in Košice-Prešov loaded area



Source: SEA

Source: SEA

The Zemplín loaded area

- **Air pollution**

Emissions from the heat and wood-processing industries are the main contributors to the level of air pollution in this loaded area. Air pollution in the southern part of the territory is caused by energy sources that burn solid fuels.

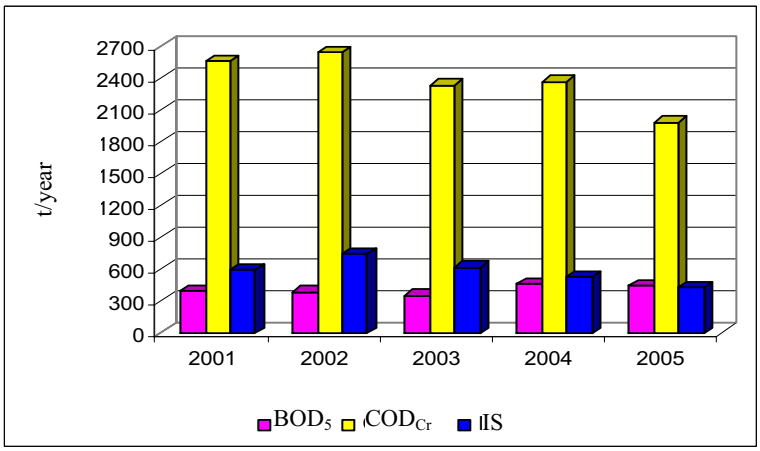
The most significant stationary sources o fair pollution in Zemplín loaded area and their emissions of basic polluting substances (BPS) in 2004 (t/year)

Operator	SPM	SO_2	NO_x	CO
1. SE, Inc., Bratislava, Elektráreň Vojany I a II	5 961.700	4 116.602	4 683.326	632.099
2. ENERGETIKA, Ltd., Strážske	5.709	236.493	48.764	9.725
3. BUKOCEL, Inc., Hencovce	671.191	2 244.106	619.433	1 683.216
4. ZEOCEM Bystré	7.071	30.585	5.298	7.692
5. CHEMES, Inc. Humenné	107.081	1 346.260	546.818	148.769

Source: SHMI

- **Water pollution**

The trend of discharged pollution from the significant sources of water pollution in Zemplín loaded area (t/year)



Source: SHMI

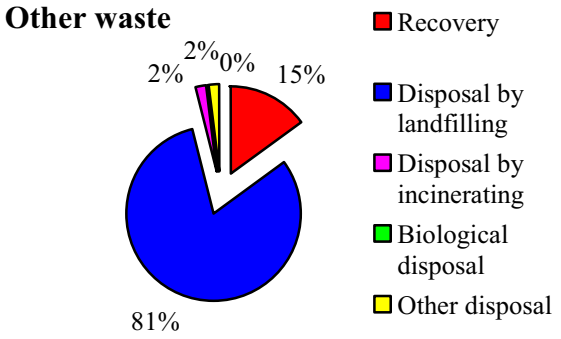
Surface water quality in Zemplín loaded area

Water source	Sampling point	Groups of indicators and quality classes					
		A	B	C	D	E	F
Laborec	Petrovce	III	II	III	II	IV	II
	Lastomír	III	II	II	II	III	I
	Ižkovce	IV	III	II	II	IV	III
Šíravský kanál	Ústie	III	II	II	II	IV	II
Zálužický kanál	Pod Šíravou	III	II	II	III	III	
Uh	Pinkovce	III	III	III	II	V	III
	Ústie	IV	II	II	II	III	III
Čierna voda-4	Stretava	IV	II	III	III	III	III
Ondava	Nižný Hrušov	III	II	III	II	IV	III
	Brehov	III	II	IV	II	IV	IV
Oľka	Ústie	V	III	II	II	III	
Topľa	Pod Vranovom	II	II	III	II	IV	III
Trnávka – 1	Zemplínske Hradište	V	III	V	IV	V	IV
Somotorský kanál	Somotor	V	III	V	III	III	
Bodrog	Streda nad Bodrogom	III	IV	III	II	IV	V

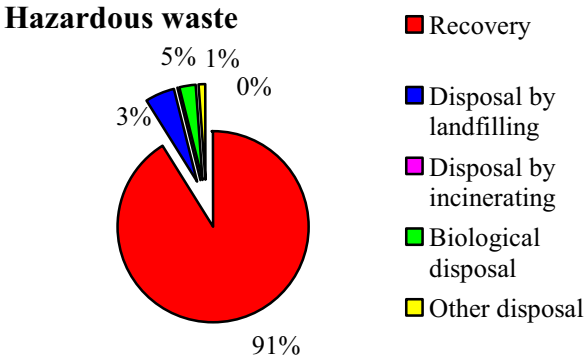
Source: SHMI

- **Waste management**

The way of waste disposal in Zemplín loaded area



Source: SEA



Source: SEA

*Aiming to the sustainable development, it is important to **create a balance between various activities of the society,** social-economical development and loading limit of the environment or particular elements of environment respectively, while respecting the self-renewable capacities of natural resources.*

National Environmental Action Programme II, adopted by the Slovak Government Decree No. 1 112/1999

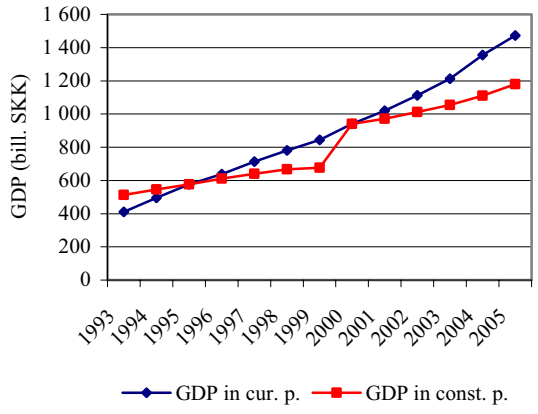
STATE OF THE ENVIRONMENT - CAUSES AND CONSEQUENCES

• ECONOMIC SECTORS AND THEIR IMPACT ON ENVIRONMENT

Economy trend in the SR

In 2005, gross domestic product (GDP) at current prices was 1 472.1 bill. SKK and in reality increased by 6.1 %, compared to the previous year. Industry contributed with 29.8 % to the generated GDP, while agriculture contributed with 4.5 %, and construction that from all sectors showed the greatest year-to-year increment (9.8 %) with 6 %.

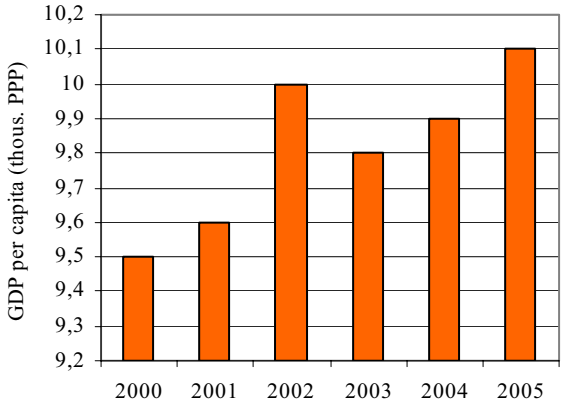
Trends in gross domestic product in SR*



* till 1999 at const. p. of 1995, from 2000 at const. p. of 2000

Source: SO SR

Trends in GDP per capita at PPP (constant prices of 2000)



Source: SO SR

GDP per capita in the SR at the purchase power parity (PPP) in 1999 was 47 % of the EU-25 average, and its share in 2005 increased to 55 %. Greatest regional share of GDP per capita at PPP in

2003 was recorded in the Bratislava region, with the share of 115.9 %. Other regions did not exceed 50 % of the EU-25 average, with East Slovakia reaching only 38.8 %.

Of total GDP volume, **private sector** produced 90.6 %, which was by 0.5 % more than in 2004. Private sector contributed to total GDP by 99.7 % from commercial activities, 99 % from agriculture, 85.9 % from industry, 63.6 % from transport and 46.7 % from forest management.

Export of goods and services in 2005 at current prices reached 1 133.9 bill. SKK and in comparison to the previous year, export of goods and services was accelerated by 13.5 %. **Import of goods and services** in 2005 at current prices reached 1 199.5 bill. SKK and grew by 15.5 % on the year-to-year basis.

In 2005, **foreign direct investments (FDI)** to the SR economy were 20 123 bill. SKK, and by the end of 2005, the cumulative volume of foreign direct investments in the SR was 417.02 bill. SKK.

Industry

- **Share of manufacturing in GDP generation**

Pursuant to the Branch classification of economic activities, there are three basic groups involved in industry: **C** - Mining and quarrying, **D** – Manufacturing and **E** – Electricity, gas and water production and distribution.

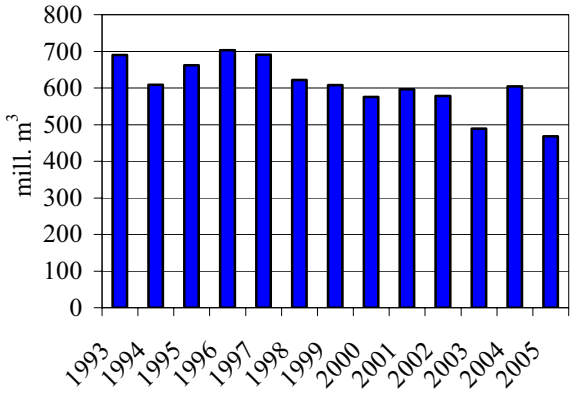
Manufacturing strengthened its positions within industry. Its share in total revenues from the industry's turnover in 2005 reached 83.8 %, while electricity, gas and water production and distribution reached 15.3 % and mineral exploitation was 0.9 %. **Total share of industry in GDP generation** in 2005 was 28.6 %.

- **Demand of industrial production on the exploitation of resources**

In 2003, share of industry in the SR in final energy consumption was 42.2 % (in the EU-25 countries it was 28 %), while in 2004 the final energy consumption in industry in the SR decreased to 37 %.

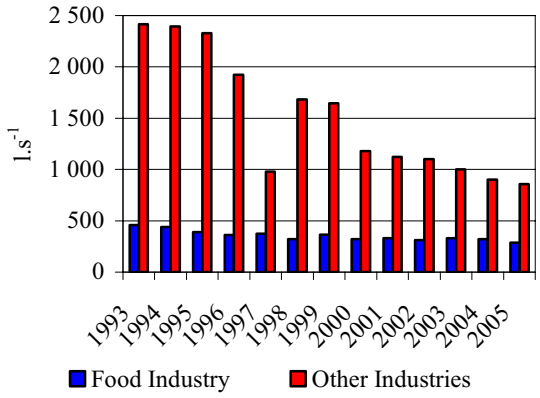
Since 1993, **surface water abstraction** by industry shows a falling tendency. In 2005, surface water abstraction by industry dropped by 32.2 %, compared to 1993. Trends in **underground water abstraction** by industry show analogical tendency.

Development in consumption of surface water in industry



Source: SHMI

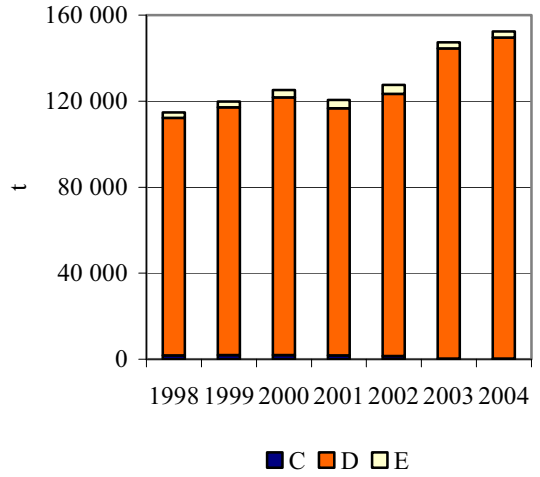
Advancement in underground water consumption in industry



Source: SHMI

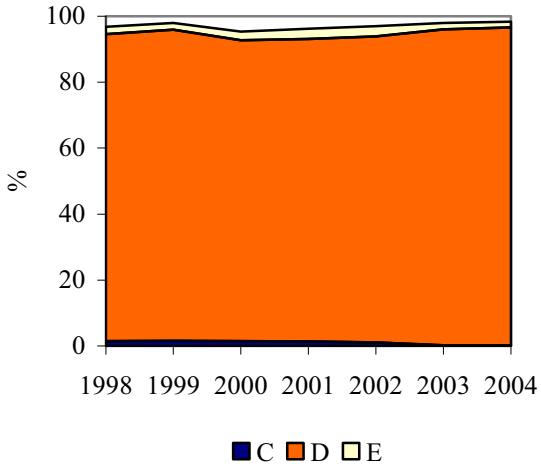
CO emissions from industry in 2004 made up as much as 98.4 % of large-size and middle-size stationary sources and emissions **increased** by 32.7 %, compared to 1998. **SO_2 emissions** from industry in 2004 made up as much as 99 % of large-size and middle-size stationary sources and emissions **decreased** by 41.2 %, compared to 1998.

CO emissions trend from stationary industrial sources



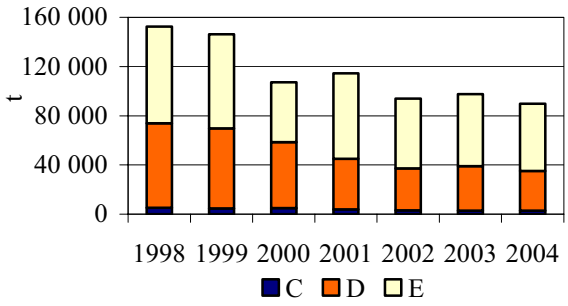
Source: SHMI

Share of CO emissions from stationary industrial sources on the overall CO emissions



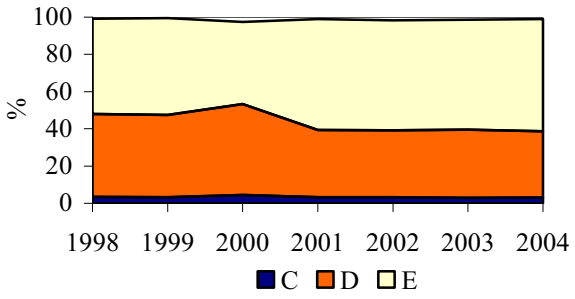
Source: SHMI

SO_2 emissions trend from stationary industrial sources



Source: SHMI

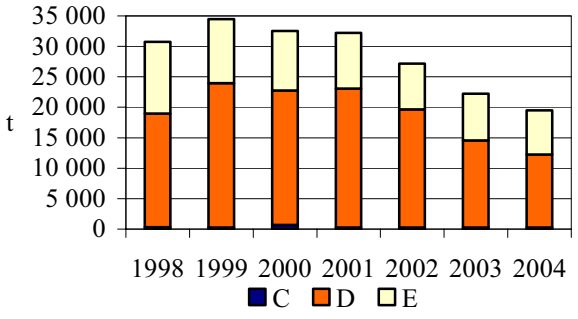
Share of the SO_2 emissions from stationary industrial sources on the overall SO_2 emissions



Source: SHMI

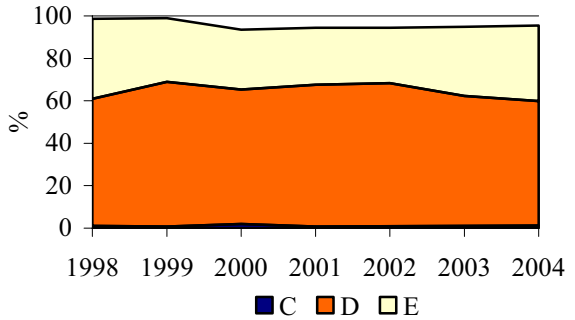
NO_x emissions from industry in 2004 made up as much as 96.3 % of large-size and middle-size stationary sources and emissions **decreased** by 31 %, compared to 1998. **SPM emissions** from industry in 2004 made up as much as 95.5 % of large-size and middle-size stationary sources, and emissions **decreased** by 36.6 %, compared to 1998.

SPM emission trend from stationary industrial sources



Source: SHMI

Share of the SPM emissions from station industrial sources on the overall SPM emissions

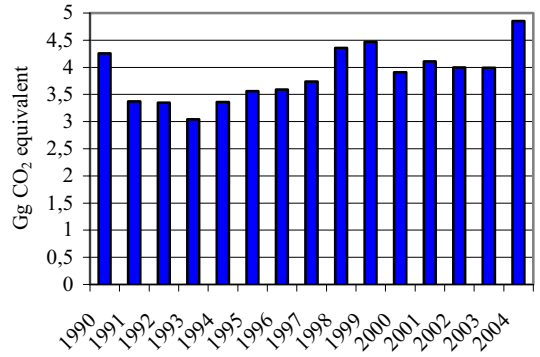


Source: SHMI

Heavy metal emissions by industry have had a decreasing tendency since 1990. However, in 2004 there was an increase in the Pd emissions from incineration processes in industry, as well as in the Cd emissions from industrial technologies, compared to the previous year.

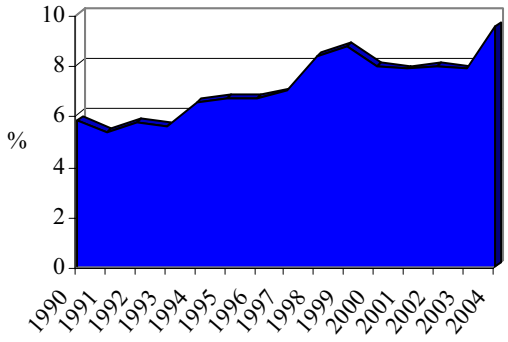
Aggregated greenhouse gases emissions from industrial processes in 1990 - 2004 had a slightly rising trend. Compared to 1990, in 2004, these emissions from industrial processes increased by 13.8 %.

Trend of aggregated emissions of the greenhouse gases from industry (Gg CO_2 equivalent)



Source: SHMI

Share of the emissions of greenhouse gases from industry on the greenhouse gases overall emissions



Source: SHMI

In 2005, **industry alone generated 6 048 208 tons of waste** (64.5 % share in total waste generation), including **304 266 tons of hazardous waste** and **5 743 943 tons of other waste.**

Extraction of minerals

Changes that occurred in 2005 lead to the reduction in the exploitation of the majority of minerals. Increase trend was in the extraction of limestone and cement raw material.

Trend in extraction of minerals between 1998 – 2005

Extracted mineral	Measure unit	1998	1999	2000	2001	2002	2003	2004	2005
Brown coal and lignite	kt	4 288.9	4 041.8	3 947.6	3 761.9	3 661.2	3 508.8	3 101.7	2 513.0
Crude oil, including gasoline	kt	60.2	60.264	56.892	54.085	51.770	47.943	42.082	33.15
Natural gas	thous. m^3	262 043	218 569	227 038	195 938	200 812	186 797	178 088	150 851
Ores	kt	1 088.4	1 083.7	1 104.0	1 047.5	719.2	706.5	977.8	651.89
Magnesite	kt	1 572.8	1 423.8	1 535.2	1 573.0	1 464.5	1 640.9	1 668.9	1 555.0
Salt	kt	102.1	100.2	101.8	104.0	102.7	104.8	104.3	105.1
Building stone	thous. m^3	4 700.2	3 473.9	3 540.4	3 881.6	4 478.3	4 503.3	4 527.5	6 016.2
Gravel sands and sands	thous. m^3	5 427.9	2 874.4	2 443.3	2 689.4	2 933.1	3 872.7	3 951.7	4 870.1
Brick clay	thous. m^3	561.1	480.3	529.5	442.1	433.4	507.4	591.7	466.8
Limestone and cement raw materials	thous. m^3	515.4	294.1	320.2	302.3	332.7	384.9	569.5	690.6
	kt	1 435.6	1 398.1	1 419.5	1 614.6	1 547.4	1 649.4	3 479.8	3 743.3
Limestone for special purposes	thous. m^3	778.3	200.9	299.4	292.3	833.0	941.4	14.9	28.50
	kt	350.0	320.0	345.0	325.0	0.0	0.0	1057.5	834.80
High-content limestone	kt	4 187.3	4 603.4	4 176.5	4 211.1	4 356.8	4 093.0	3 767.3	4 053.5
Other raw materials	thous. m^3 (surface)	742.9	896.1	983.7	1 026.9	1 216.8	1337.2	567.8	509.1
	kt (underground)	150.1	120.0	127.7	142.3	86.4	86.2	91.6	106.5
	kt (surface)	0.0	0.0	2.4	32.30	31.1	11.8	1 143.9	1 024.0

Source: MMO SR

Brown coal and lignit extraction in 2005 dropped again. Individual mines showed 2 513.03 kt of extracted volumes. This is the lowest extraction volume since 1997. Compared to 2004 the number of workforce in this industry decreased by 13.8 %.

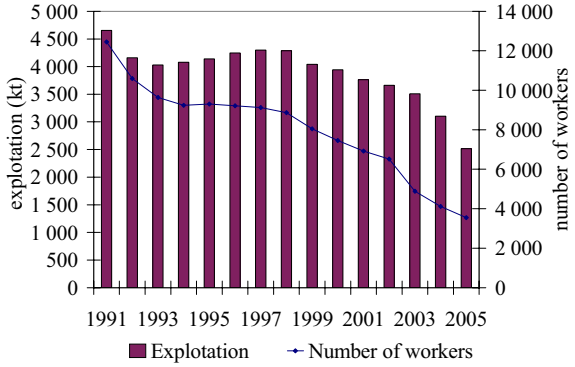
Crude oil, gasoline, and natural gas extraction was also decreased, compared to the previous year. Total extracted volumes included 2 457 t of non-paraffin crude oil, 28 156 t of semi-paraffin crude oil, and 2 535 t of gasoline. Natural gas stores decreased by 150 851 thous. m^3.

Exploitation of **ore minerals** decreased. The Siderit, Ltd. company in Nižná Slaná has the biggest share on all ore volumes, (603.5 kt) The Slovenská banská Ltd. company in Hodruša Hámre, contributed by 19.29 kt, while Rudňany contributed by 29.1 kt.

In 2005, there was a slight increase in exploitation of **non-ore raw material.** However. 1 555 kt of *magnesite* was extracted at three significant magnesite deposits (Jelšava, Lubeník, Hnúšťa), which is a reduction by 113.9 kt, compared to the previous year. In 2005, exploitation of *rock salt* (Solivary, Prešov) was at the level of 105.1 kt of salt in salt water, from which 99.9 kt of salt was produced.

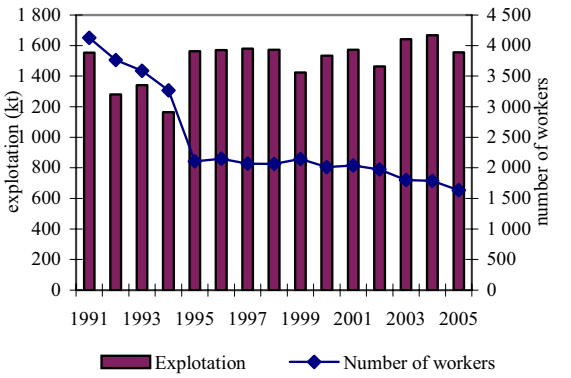
Basic indicators of mineral extraction trend in SR between the years 1991 – 2005

Trend in brown coal and lignite extraction



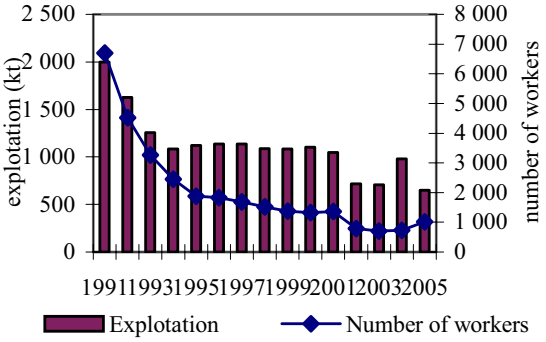
Source: MMO SR

Trend in magnesite extraction



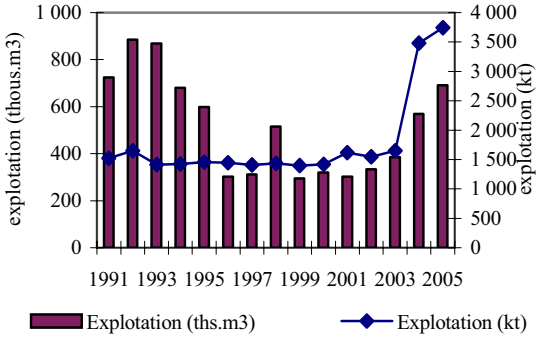
Source: MMO SR

Trend in ores extraction



Source: MMO SR

Trend in limestone and cement materials extraction



Source: MMO SR

♦ **Environmental impact of mineral exploitation**

Mineral extraction is demanding in terms of environmental protection. SGIDS has been commissioned, to keep a register of abandoned mining works. As of December 31, 2005, the register had 16 517 objects left after abandoned mining activity.

The Central mining office keeps records of current mining works including **dumps** and **tailings dumps.** As of December 31, 2005, there were 107 active (78 in the extraction site, 29 outside the extraction site) and 50 inactive **dumps** (40 in the extraction site, 10 outside of it) left after the extraction of minerals, and also 38 active (21 in the extraction site, 17 outside the extraction site) and 12 inactive (5 in the extraction site, and 7 outside the extraction site) **tailings dumps.** Compared to the previous year, territory with located dumps increased, while the area of tailings dumps decreased only slightly.

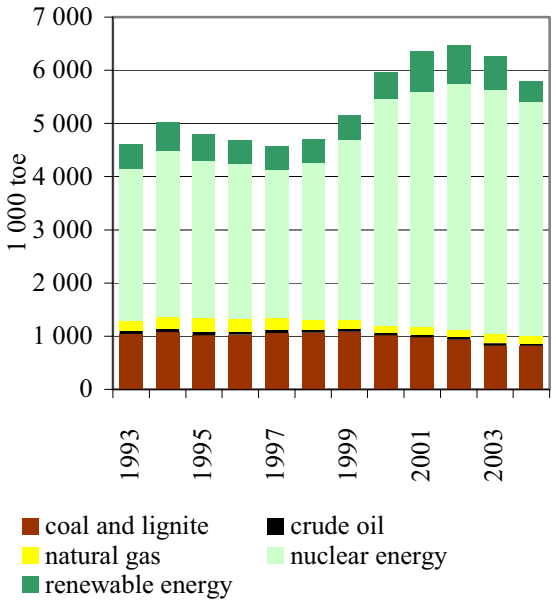
Energy management, Heat production and Gas management

♦ Energy sources balance

SR ensures almost 90 % of the primary energy sources (PES) through purchase outside the internal EU market. The only significant domestic energy source is brown coal, which covers 79 % of brown coal consumption needed for electricity and heat production. Domestic exploitation of natural gas and crude oil is not significant.

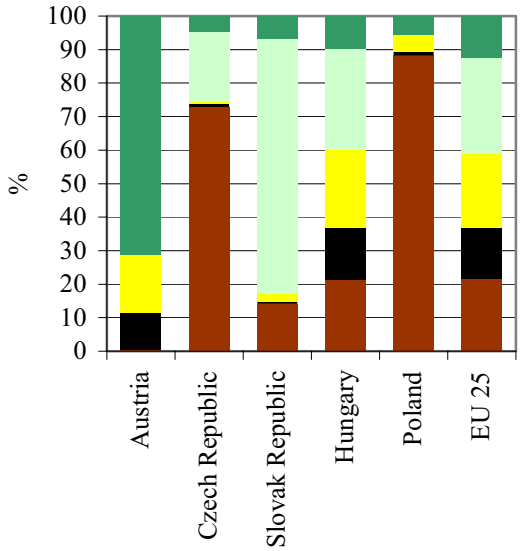
Structure of exploited PES in the SR since 1996 is typical for the increased consumption of gas fuels and renewable energy sources at the cost of consumed solid fuels, also due to more strict emission limits. Utilization of nuclear fuels in recent years plays an exceptionally significant role in the PES structure of the SR. We expect only a slight increase in crude oil consumption, especially in the sector of transportation, due to the replacement of crude oil-based components with bio-fuels.

Trend in used primary energy sources in the SR



Source: EUROSTAT

Structure of primary energy sources in 2004 – international comparison



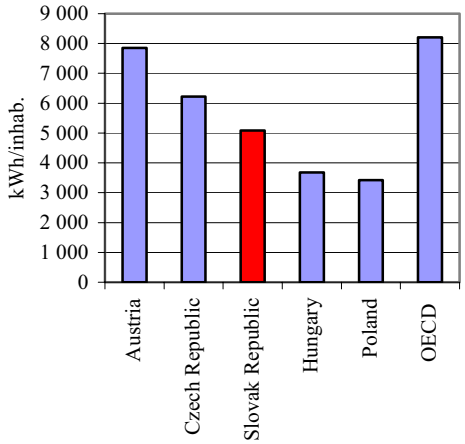
Source: EUROSTAT

Consumption of primary energy sources per capita in the SR is still lower than in the EU 15 countries, which is less than 150 PJ per capita. Although it showed some increase in the last year, it currently does not reach more than 90 % of the EU average.

Compared to the developed OECD and EU countries, Slovakia has a low electricity consumption per capita, which is caused mainly by low electricity consumption by households and services.

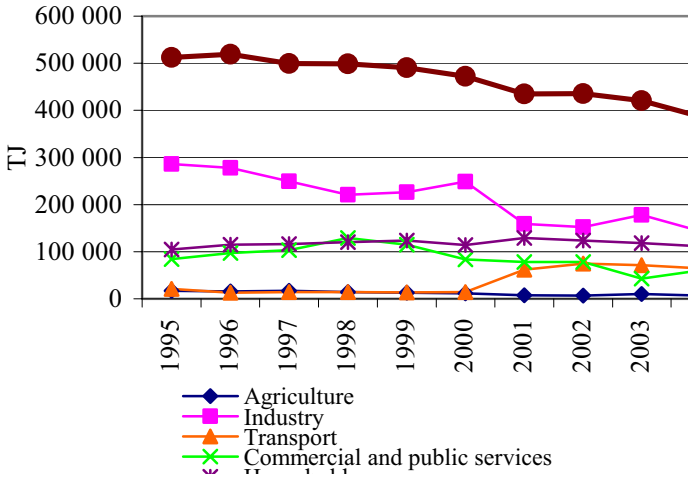
Of all sectors, industry has the greatest final consumption in all fuel types in the SR. Compared to the other EU countries, a relatively low household consumption has not changed, while the sector of transportation shows increased energy consumption since 2000.

Electricity consumption per capita in 2004 – international comparison



Source: IEA

Trend of final energy consumption in sectors of economy



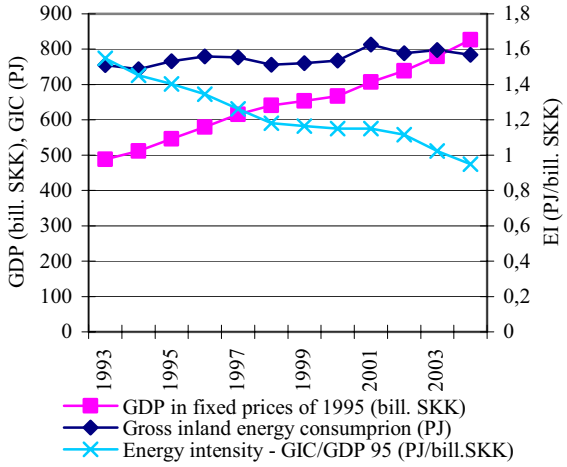
Source: SO SR

♦ **Energy intensity**

Energy intensity (EI) is an important economic indicator also used to make international comparisons. It is defined as the share of the gross inland energy consumption (GIC) on the generated GDP (GIC/GDP=ED). Over the recent years, the GDP growth was accompanied by a balanced consumption of energy sources and a drop in the final energy consumption. Since 1993, energy intensity has been decreasing every year by 4 %, caused mainly by more development in the value added production, as well as by introduction of rationalization measures in production and consumption alike.

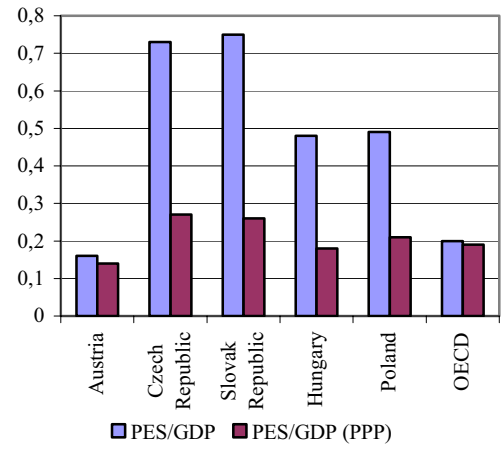
Notwithstanding this positive trend, the EI in Slovakia is still about 1.5-times higher than the average consumption of the OECD countries.

Trend in selected indicators of energy intensity in SR



Source: SO SR

Energy intensity in 2004 – international comparison



Source: IEA

Note:
PES/GDP (toe/USD) – energy intensity by PES,
PES/GDP – PPP (toe/USD) - energy intensity by PES, expressed through the purchase power parity (PPP) that evaluates movements in exchange rates in prices over long time periods. Thus, the differences among individual countries are reduced.

♦ Electricity power management

Present composition of installed outputs of the SR sources is equally distributed among the nuclear, heat, and hydro power plants. More that a half of the electricity production is provided by nuclear power plants, while thermal power plants represent app. 30 % of the production, the rest of the produced electricity comes from hydro power plants.

Generation station capacity according to the type in SR (MW)

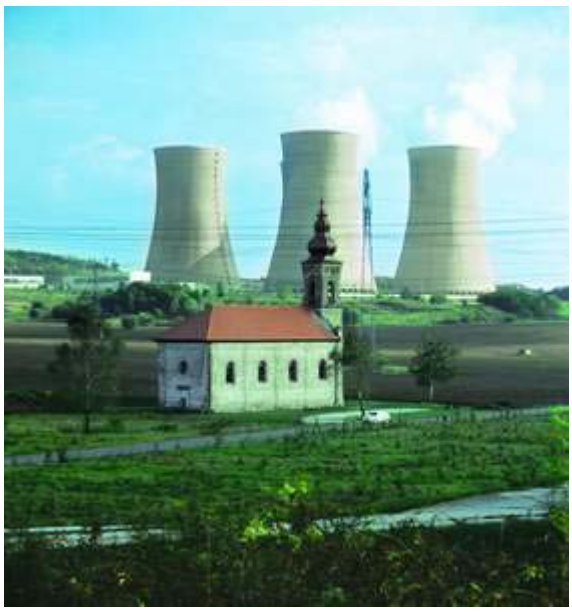
Indicator	1998	1999	2000	2001	2002	2003	2004
Nuclear power plant	2 200	2 200	2 640	2 640*	2 640*	2 640*	2 640*
Thermal power plant	3 159	3 132	3 144	3 190*	2 929*	3 319*	3 120*
Hydro power plant	2 417	2 419	2 420	2 470*	2 505*	2 507*	2 518*
Total	7 777	7 752	8 205	8 300*	8 074*	8 466*	8 278*

Source: SO SR, MoEC SR

Note: The output of the thermal power plants includes also the output of the gas-fired and combustion power units.
* Data taken from revised methodology SO SR 2002

In 2004, total produced electricity in the SR energy network dropped on the year-to-year basis by 1.86 % to 30 567 GWh.

Overall domestic electricity consumption dropped on the year-to-year basis by 0.65 % to 28 705 GWh, which is 187 GWh less than in 2003. Domestic electricity consumption was fully covered from the internal production. Availability of resources made it possible to locate part of the produced electricity on international markets, reaching the balance of 1 862 GWh (export-dominant), which represents 72.8 % of the 2003 value.



♦ Gas management

Slovak Gas Management Industries in Bratislava (Slovenský plynárenský priemysel, Inc. Bratislava) is the dominant company on the Slovak gas market, with the greatest market share. In 2004, the company provided services to approximately 1.441 mil. of clients in various segments (bulk clients, small clients, and households). Approximately 98 % of domestic gas consumption is imported from the Russian Federation. Compared to 2003, the sale of natural gas on the designated Slovak territory in 2004 dropped by 4.4 %.

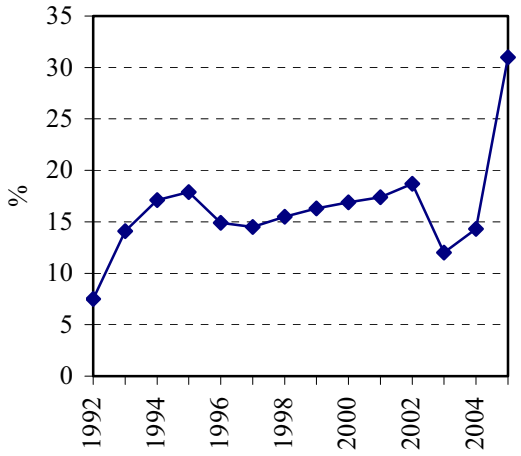
The Slovak gas distribution system is interconnected with the neighboring countries' networks, specifically with Ukraine, Czech Republic and Austria. Capacity of the transport network is more than 90 bill. m^3 annually.

Natural gas consumption in the Slovak Republic (SR) in 2004 was 6.7 bill. m^3.

♦ **Renewable energy sources (RES)**

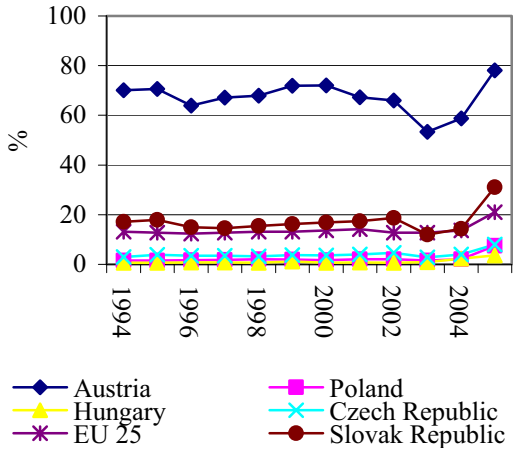
Increase in renewable energy sources' extraction represents a significant element in the system of measures introduced to meet the Kyoto Protocol's objectives. Share of electricity produced from the RES (renewable energy sources) on total electricity consumption in 2004 was 14.4 %. Hydro power plants have the greatest share on electricity production from all RES in Slovakia (more than 90 %). For this reason, volumes of electricity produced within the Slovak RES network fully depend on favorable hydro-energy conditions. Biomass is the dominant RES used to produce heat. In total, RES reached a 3.9 % share on the gross domestic energy consumption in 2004.

Share of electricity from renewable energy to gross electricity consumption



Source: EUROSTAT

Share of electricity from renewable energy to gross electricity consumption – international comparison

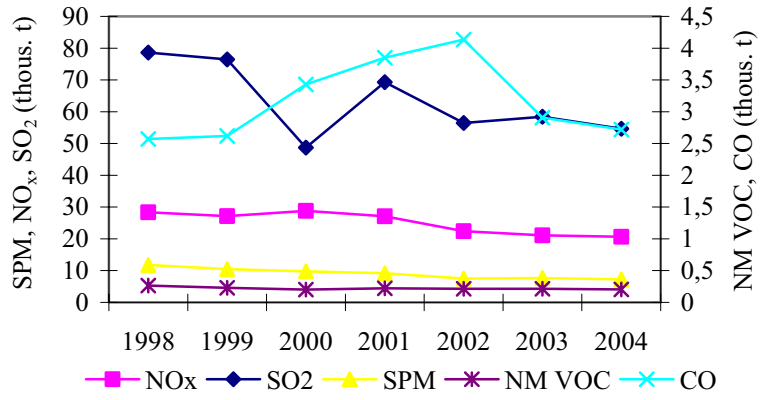


Source: EUROSTAT

♦ **Air pollution caused by energy production**

Over the recent years, sulfur oxides (SO_2), nitrogen (NO_x), and particulate matter (PM) emissions were reduced significantly. This situation was caused by decreased production and consumption of energy and a shift in the fuel base toward more purified fuels, as well as by using fuels with better quality characteristics.

Trend of basic polluting substances emissions from energy stationary sources in 1998 – 2004 in the SR



Source: SHMI

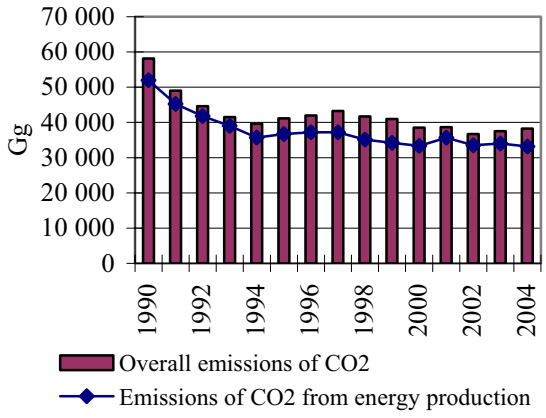
Power management sector has the most dominant share on the greenhouse gases emissions. In 2004, the share was almost 80 % of total greenhouse gases emissions in the SR. Over the monitored period, greenhouse gases air emissions showed a light reduction in the power management (energy) sector. This was caused by a higher proportion of services on the GDP production, higher share of natural gas within the fuel base, structural changes, and decreased energy consumption in energy-demanding sectors.

Trend of greenhouse gasses emissions from energy production in the SR (thousand tons)

Emissions	1990	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
CO_2	51 982	36 685	37 186	37 186	35 136	34 191	33 345	35 669	33 513	34 035	33 153
CH_4	21.3	8.7	8.6	8.4	7.8	7.4	6.7	6.3	4.5	4.4	4.0
N_2O	0.58	0.39	0.39	0.38	0.35	0.33	0.29	0.30	0.29	0.31	0.30

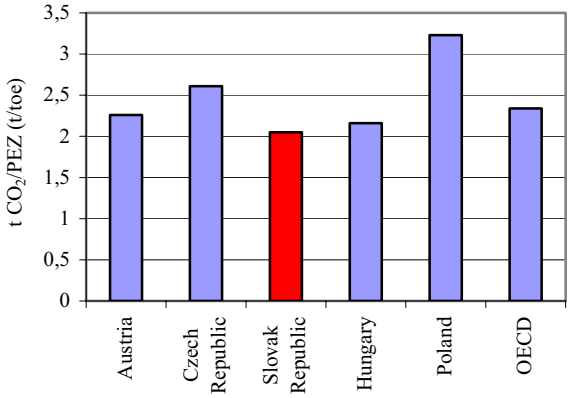
Source: SHMI

Trend of CO_2 emissions from energy production (thousand tons)



Source: SHMI

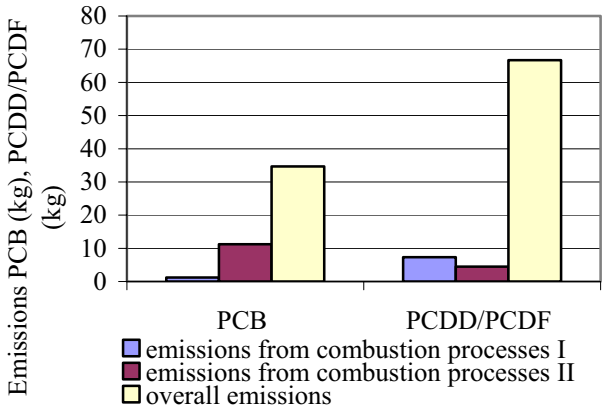
Energy Intensity according to CO_2 in 2004 – international comparison



Source: IEA

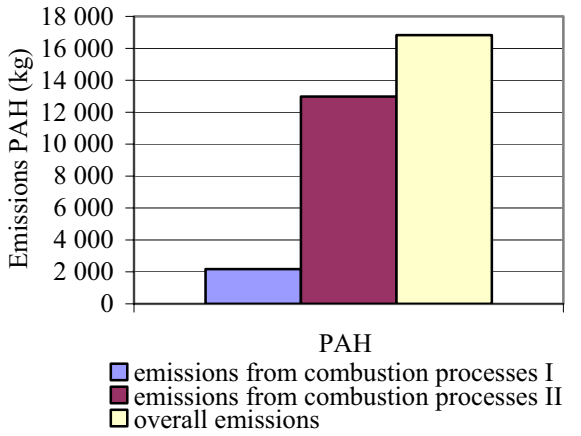
The POP emissions have a falling tendency since 1990. This is caused by a drop in the production and changes to fuels used for household heating. Fluctuations in the PCB emissions (their increase) in 2003 and 2004 relates to the increased consumption of firewood for household heating.

PCB and PCDD/PCDF emissions from energy production in 2004



Source: SHMI

PAH emissions from energy production in 2004



Source: SHMI

Positive trend in the power management sector is recorded mainly by a dramatic reduction to **heavy metals emissions**. The following table shows a dramatic decrease in these emissions since 1990.

- **Waste water from electricity production and gas management**

Of all areas within the energy sector, electricity power management contributed the most to total volumes of discharged wastewater. Wastewater produced by electric power plants mainly includes water from technological and cooling processes, and also some runoff water. Wastewater from technologies is chemically contaminated. In case of nuclear power plants, water from the primary cycle also shows a degree of radio-chemical contamination. Water used as a coolant shows mostly thermic contamination. Greatest load exists in the chemical oxygen demand for the COD_{Cr} (dichromate) indicator, and insoluble substances (IS). In total, in 2005, volumes of discharged water from the electricity and gas energy sector decreased. On the contrary, heat management shows a negative trend.

Waste water discharged by energy production in 2005

Waste water from electricity production	Volume (thousand $m^3.y^{-1}$)	IS ($t.y^{-1}$)	BOD_5 ($t.y^{-1}$)	COD_{Cr} ($t.y^{-1}$)	ENP_{uv} ($t.y^{-1}$)
Treated	17 824.171	125.800	42.957	270.796	0.513
Untreated	218 275.617	155.672	12.289	54.949	0.0
Subtotal	236 099.788	281.472	55.246	325.745	0.513
Waste water from heat production					
Treated	1 668.077	8.939	4.190	15.038	0.0
Untreated	1 761.507	11.240	0.0	2.098	0.003
Subtotal	3 429.584	20.179	4.190	17.136	0.003
Waste water from gas management					
Treated	0.0	0.0	0.0	0.0	0.0
Untreated	25.693	0.257	0.0	0.0	0.0
Subtotal	25.693	0.257	0.0	0.0	0.0
Total	239 555.1	301.908	59.436	342.881	0.516

Source: SHMI

- **Waste water from electricity production and gas management**

In 2005, the SE company, Inc. produced total volumes of 1 147 206 tons of waste of all categories, including 99.7 % from the „other waste“ category. Waste from thermal power stations of SE Inc. was **98.22 %** of total generated waste, while the SE Inc. nuclear waste was **1.56 %**, and waste from the aquatic SE Inc. power plants was **0.21 %** of total generated waste.

The SPP Inc. company produced 17 333 tons of waste in 2005, including 13 072 tons of other waste, and 4 261 tons of hazardous waste. Increase in the volumes of generated waste in 2005 was caused by a legislative change to the definition of the waste origin relating to service, cleaning and maintenance activities.

Transport

Current trend in transport is mostly influenced by the road passenger and cargo transport that is flexible enough to follow the economic situation at the expense of more environment-friendly ways of transport.

- **Transport share on GDP production**

Sector of transport represented 7.2 % of the GDP production in 2005.

Transport share on GDP production (%)

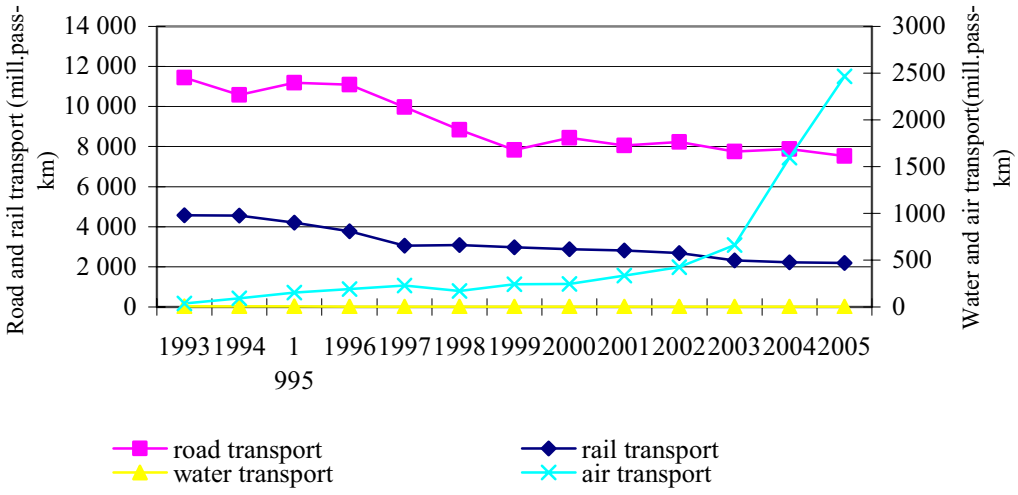
	1993	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
Transport	6.1	8.3	7.5	7.6	7.8	7.5	7.6	7.6	7.1	6.8	7.2

Source: SO SR

- **Passenger and freight transport**

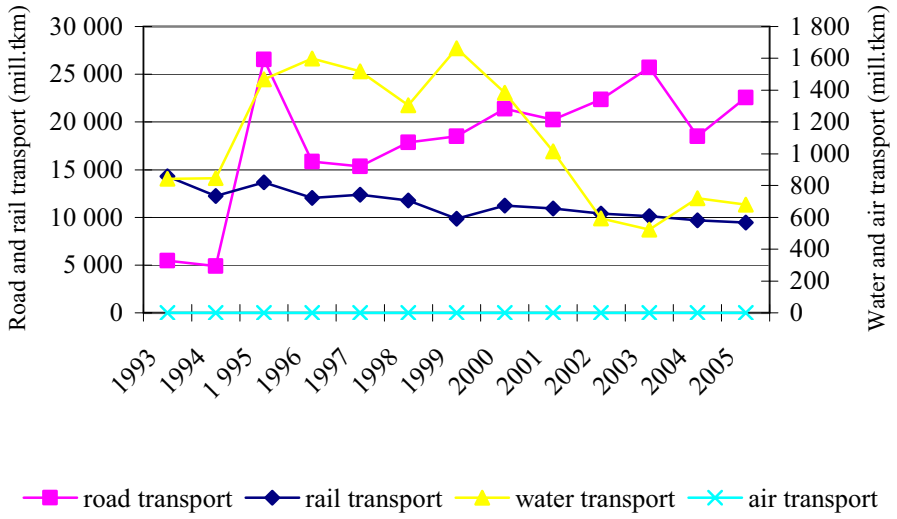
Compared to 1993, reduction in modal split in road passenger transport was more than 30 %, in case of the railway transport the reduction was even by more than 50 %. Modal split in water passenger transport dropped by more than 40 %. Road transport shows the greatest share on modal split by cargo transport - appr. 60 %. In 2005, modal split by railway transport dropped by more than 30 %, compared to 1993, while modal split by aquatic cargo transport in 2005 dropped by appr. 19 %, compared to 1993.

Passenger transport demand by mode (mill. pass-km)



Source: SO SR

Freight transport demand by mode (mill. tkm)



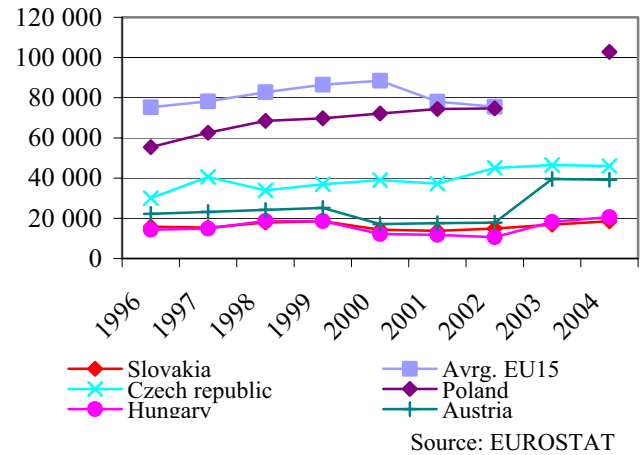
Source: SO SR

Indicators of city transport

Indicator	1993	1996	1998	1999	2000	2001	2002	2003	2004	2005
Total number of transported passengers (ths.)	525 744	543 246	509 862	485 472	404 539	373 269	370 018	394 465	383 118	
Trams										
Transported passengers (ths.)	188 768	143 259	126 488	117 714	100 185	98 719	96 553	104 560	104 391	109 101
Seat kilometres (mill. km)	2 734	1 960	1 942	1 888	1 802	1 866	1 780	1 764	1 818	1 822
Trolleybuses										
Transported passengers (ths.)	43 346	71 689	76 375	71 934	62 997	53 167	54 707	59 034	57 688	58 032
Seat (mill. km)	717	799	993	1 039	1 029	1 008	1 048	1 110	1 103	1 075
Buses										
Transported passengers (ths.)	293 629	328 298	306 999	295 824	241 357	221 383	218 758	230 871	221 039	227 931
Seat (mill. km)	4 998	4 265	4 489	4 638	4 011	3 996	3 990	3 899	3 881	3 846

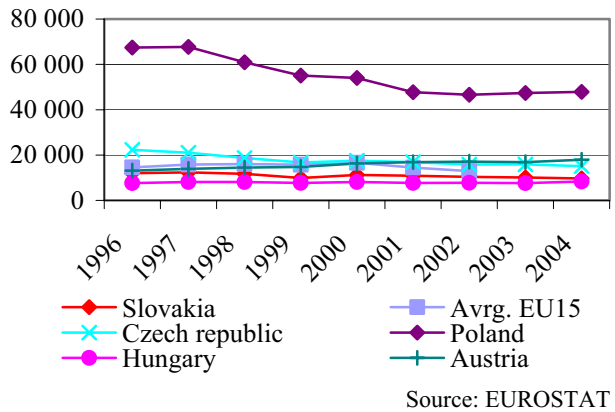
Source: SO SR

Freight transport demand by road (mill. tkm)



Source: EUROSTAT

Freight transport demand by rail (without passenger cars) (mill. tkm)



Source: EUROSTAT

- **Number of vehicles**

Notwithstanding a slight decrease in annual increments in the number of road motor vehicles, total number of motor vehicles in 2005 grew by 18 % over the period on 1993 - 2005. Major increase in the number of motor vehicles in 2005 was recorded in the categories of heavy trucks and pickup trucks

(grew by 58 %, compared to 1993), and passenger cars (grew by 31 %, compared to 1993). Number of transport vehicles in railroad and water transport types (being the most environmental-friendly transport modes for passengers and goods) dropped by appr. 20 % over the last 20 years.

Number of motor-vehicles by individual types (pcs)

Total number of vehicles	1993	1996	1998	2000	2001	2002	2003	2004	2005
Passenger cars	994 933	1 058 425	1 196 109	1 274 244	1 292 843	1 326 891	1 356 185	1 197 030	1 303 704
Trucks and Pick up vans	101 552	97 078	111 081	110 714	120 399	130 334	142 140	140 395	160 089
Special vehicles	46 121	45 430	43 690	39 188	36 082	34 150	32 033	22 672	22 648
Road tractors	*	*	1 721	3 281	4 994	6 837	8 851	11 435	14 141
Buses	12 655	11 321	11 293	10 920	10 649	10 589	10 568	8 921	9 113
Tractors	65 150	62 810	63 448	64 351	63 422	62 644	61 690	44 080	46 544
Motorcycles (excl. small)	81 263	79 479	100 891	45 647	46 676	47 900	48 709	51 977	56 366
Trailers and Semi-trailers (included bus)	167 174	176 246	191 241	201 269	206 627	213 167	218 517	170 491	188 411
Others	*	*	*	2 226	1 507	1 306	1 161	-	101
Total	**1 468 848**	**1 530 789**	**1 719 474**	**1 751 840**	**1 783 199**	**1 833 818**	**1 879 854**	**1 647 001**	**1 801 117**

Source: SO SR

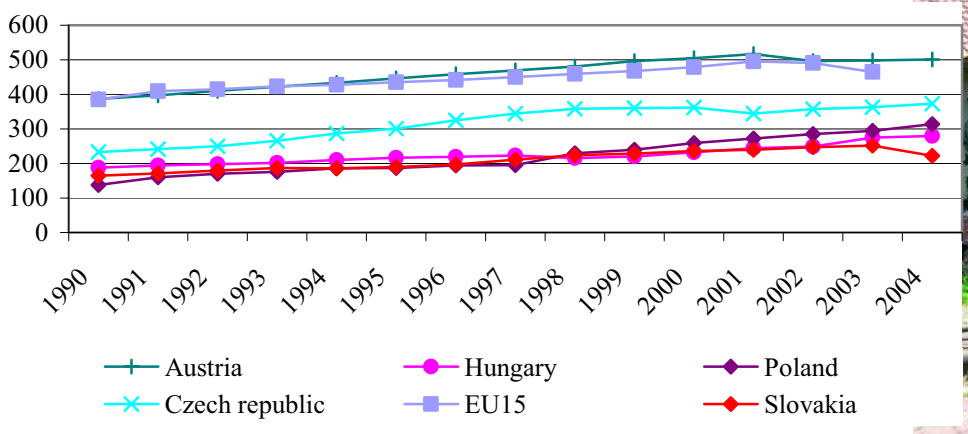
[1] in 1993-1996 included among special vehicles, since 1997 newly-purchased and monitored independently

Rail transport equipment (pcs)

Total number of vehicles	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
Locomotive	1 296	1 290	1 257	1 253	1 208	1 167	1 131	1 116	1 072	1 079
Diesel railcars	373	375	370	383	361	344	320	315	279	281
Wagons	35 898	34 424	32 621	29 710	26 975	24 587	24 796	23 973	24 936	25 515
Passenger railway vehicles	2 096	2 061	1 727	1 703	1 642	1 561	1 873	1 597	1 524	1 286
Combined transport	-	712	662	349	457	452	449	227	449	257
Total	**39 663**	**38 862**	**36 637**	**33 398**	**30 643**	**28 111**	**28 569**	**22 522**	**27 811**	**28 161**

Source: SO SR

Number of passenger cars per 1 000 inhabitants– international comparison



Source: EUROSTAT

- **Transport infrastructure**

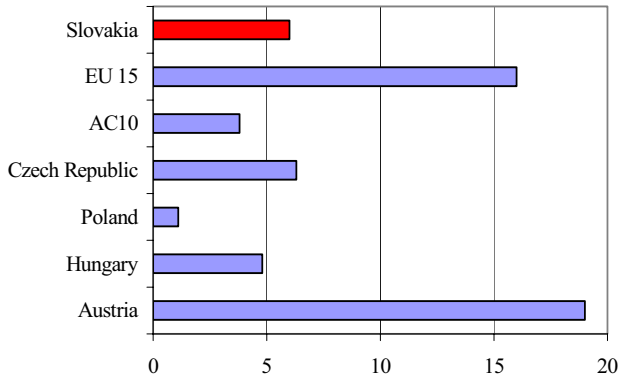
In 2005, the SR transport network included 17 803 km of roads and motorways. Highways represented 328 km of the network. The length of railways was 3 665 km, with 1 535 km of electrified tracks. The length of navigable watercourses remained unchanged at 172 km, with channel length of 38.45 km.

Basic data on the transport infrastructure (km)

	1993	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
Length of roads and motorways	17 865	17 867	17 627	17 710	17 734	17 737	17 736	17 750	17 772	17 780	17 803
of which motorways	198	215	219	228	295	296	296	302	313	316	328
Length of railways	3 661	3 673	3 673	3 665	3 665	3 662	3 662	3 657	3 657	3 660	3 658
of which electrified lines	1 415	1 516	1 516	1 535	1 535	1 536	1 536	1 556	1 558	1 556	1 556
Length of navigate inland waterways and watercourses	172	172	172	172	172	172	172	172	172	172	172
of which watercourses	38.45	38.45	38.45	38.45	38.45	38.45	38.45	38.45	38.45	38.45	38.45

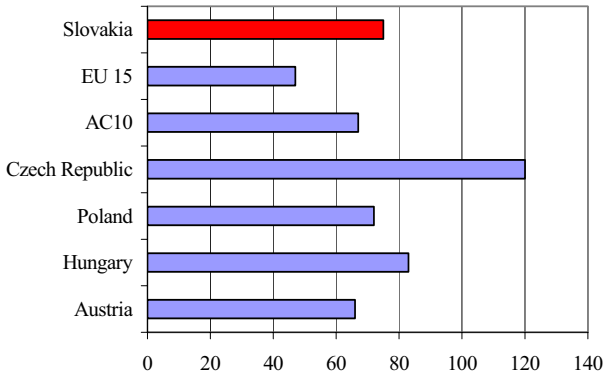
Source: SO SR

Density of the road network (km/1 000 km^2) – international comparison



Source: EUROSTAT

Density of the railway network (km/1 000 km^2) – international comparison

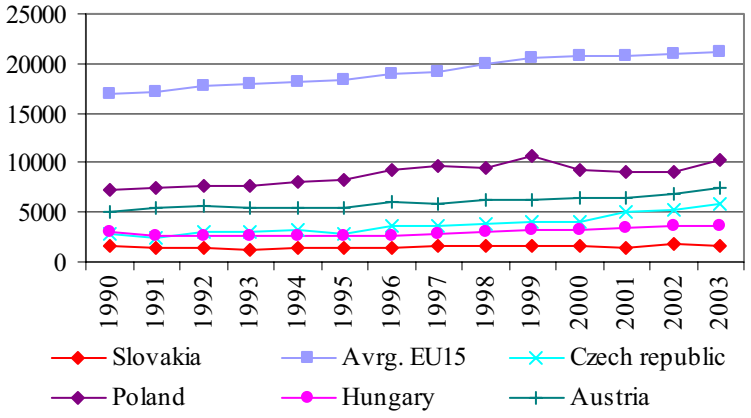


Source: EUROSTAT

- **Demand of transport on the utilisation of resources**

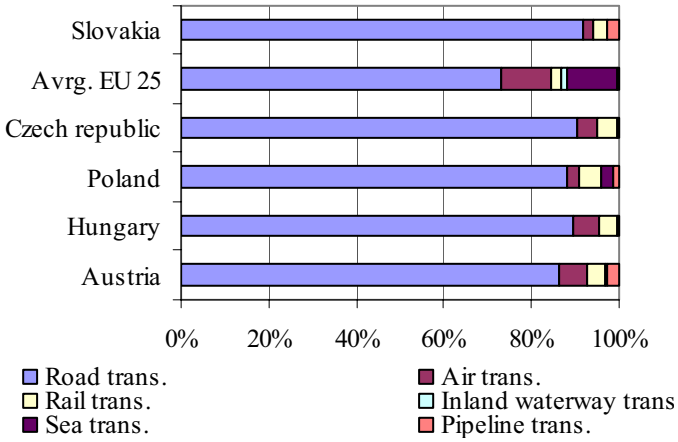
Final energy consumption in the transport sector over the period of 14 years has more than doubled itself. Overall consumption of liquid fuels (96 %) represents the greatest share of energy consumption in the transport sector on the overall energy consumption, while the share of solid fuels, gaseous fuels and electricity overall consumption remains small. Road transport shows the greatest share on the overall energy consumption in the transport sector (95 %).

Final energy consumption by transport (1 000 toe) – international comparisons



Source: EUROSTAT

Distribution of final energy consumption over individual types of transport in 2003 (%) international comparisons



Source: EUROSTAT

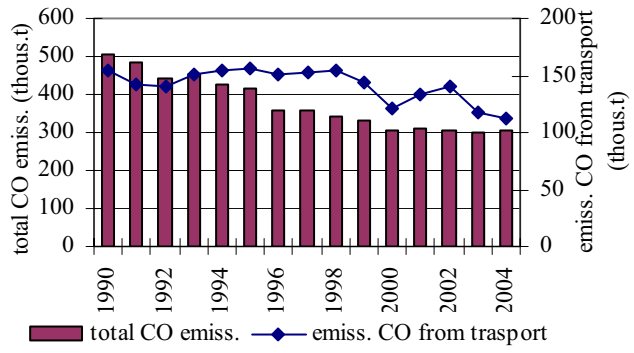
♦ **Impact of transport on environment**

Over the recent years, important changes in the SR were introduced by a significant increase in the number of motor vehicles. Corresponding changes to the transport situation were dominant mainly in cities and residential zones, where there is an increased load on environment and public health.

Emissions from transport

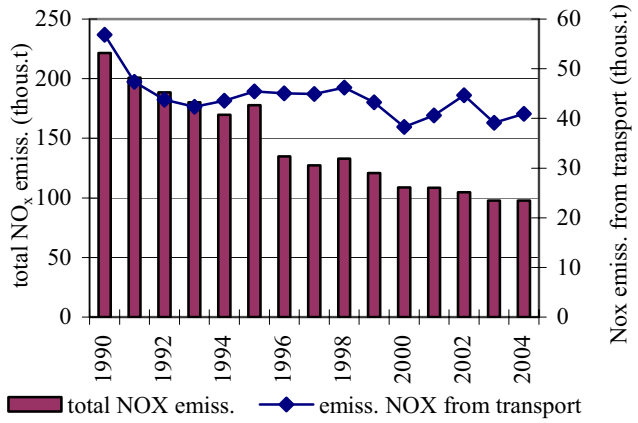
Over the recent years, trend in the produced emissions by transport in the SR, in terms of its impact on environment, has been influenced by two major factors: negative impact of the rapid growth in road transport, mainly by its most adverse component – the passenger car transport, its increasing modal split and fuel consumption which is positively off set by the growing favourable trend in new-generation cars with environment-friendly and better energy parameters, equipped with a three-way catalytic converter.

Trend in CO emissions from transport compared to total CO emissions in the SR



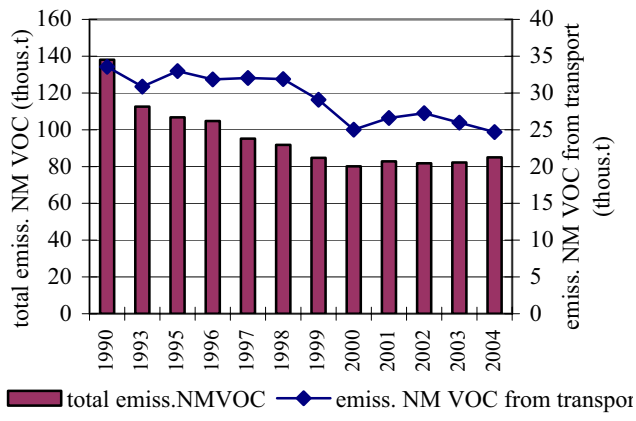
Source: SHMI

Trend in NO_x emissions from transport compared to total NO_x emissions in the SR



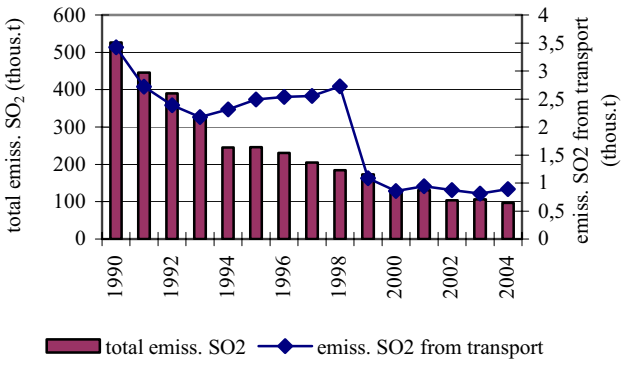
Source: SHMI

Trend in NM VOC emissions from transport compared to total NM VOC emissions in the SR



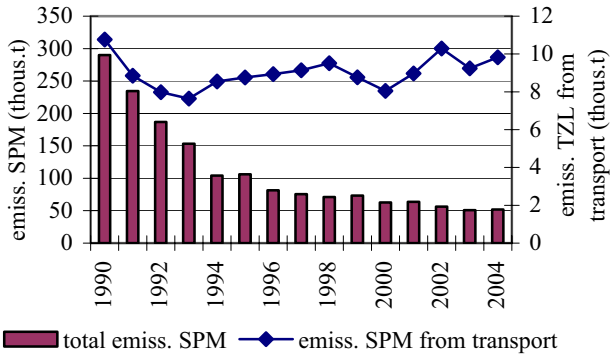
Source: SHMI

Trend in SO_2 emissions from transport compared to total SO_2 emissions in the SR



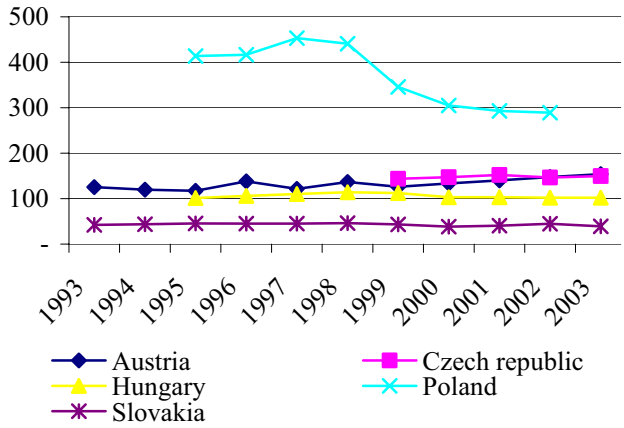
Source: SHMI

Trend in SPM emissions from transport compared to total SPM emissions in the SR



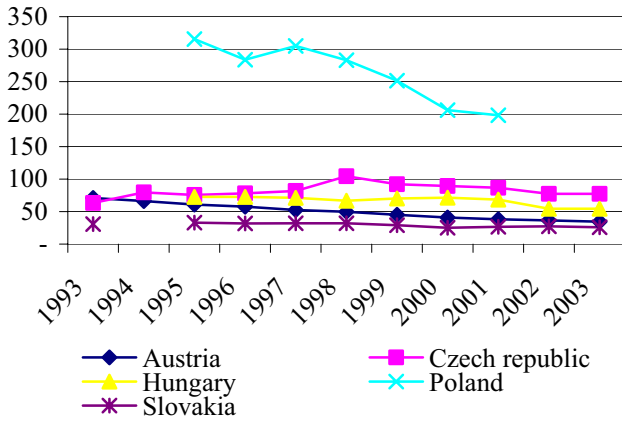
Source: SHMI

Trend in NO_x emissions from transport (thous. t) – international comparisons



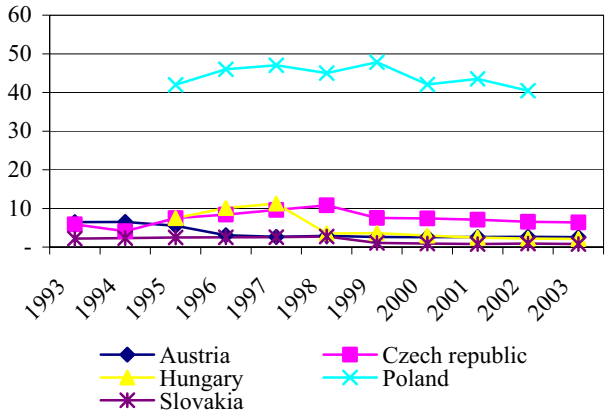
Source: OECD

Trend in NM VOC emissions from transport (thous. t) – international comparisons



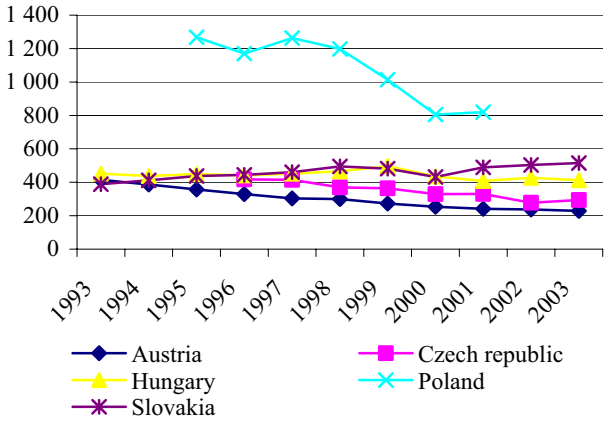
Source: OECD

Trend in SO_2 emissions from transport (thous. t) – international comparisons



Source: OECD

Trend in CO_2 emissions from transport (mill. t) – international comparisons



Source: OECD

In terms of transport's share on total emissions of the assessed pollutants for 2004, significant is transport's share on CO emissions – 37 %, 42 % in case of NO_x and 29 % in case of NM VOC.

Solid pollutants represented 19 % of all emissions in 2004, while the SO_2 emissions showed 0.9 %. Transport's share on the greenhouse gases emissions is approximately 11 %, with the CO_2 share of 14.2 %, and the N_2O share of 5.3 % being among the most dominant. Transport's share on heavy metal emissions is approximately 2.7%, with copper showing the greatest share on heavy metal emissions by transport (7.7 %) followed by zinc (2.4 %), and lead (2 %).

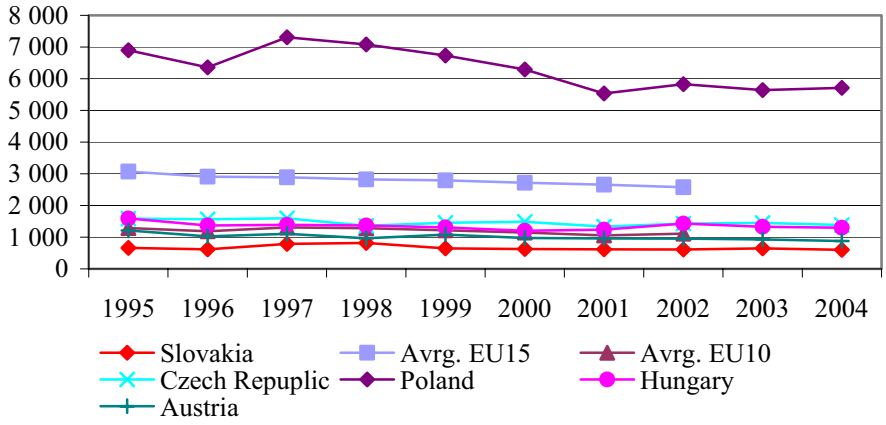
Waste from transport

In 2005, there was 151 461 tonnes of waste generated in the area of transport and transport routes. This included 94 654 tons of hazardous waste, and 56 806 tons of other waste.

Traffic accident rate

There was a slight reduction in the number of traffic accidents in 2005, compared to the previous year. The same trend exists in traffic accidents analysis, with reduced number of traffic casualties, heavily injured, and injured, compared to 2004. However, over the monitored period of 1993 – 2005, the number of traffic accidents increased by 20 %. Traffic accidents aftermath analysis still shows a negative trend, with increasing numbers of traffic casualties, heavily injured, and lightly injured.

Number of people killed in road accidents – international comparisons



Source: EUROSTAT

Agriculture

♦ Economy of agriculture

In 2005, percentage of agriculture on gross domestic product was 4.7 %.

♦ Structure of agricultural land

In 2005, **total area of agricultural land** in the SR was 2 432 979 ha. The area of agricultural land decreased by 1 770 ha, compared to 2004. Loss in agricultural land was mostly the result of construction activity (988 ha), including the civil and household construction (367 ha), 464 ha of agricultural land was forested.

Structure of the agricultural land (state to the date 31st December 2005)

Type of land	Area(ha)	Share of agricultural land (%)
Agricultural land total	2 432 979	100.00
Arable land	1 429 040	58.73
Hop-fields	538	0.02
Vineyards	27 307	1.12
Gardens	76 865	3.16
Orchards	17 947	0.75
Permanent grassland	881 283	36.22
Total area of SR	4 903 467	-

Source: IGCC SR

Size of arable land per one inhabitant in 2005 was 0.27 ha.

Crop production

The year-to-year reduction in the majority of crop areas, together with reduction in hectare yields, influenced total production of plant commodities. The plant production decreased, especially in potatoes.

In comparison to 2004, genetic diversity of agriculture produce in 2005 increased in winter wheat, spring barley, and sugar beet. Potatoes and rapeseed produce decreased.

Number of agriculture plant's varieties in the SR

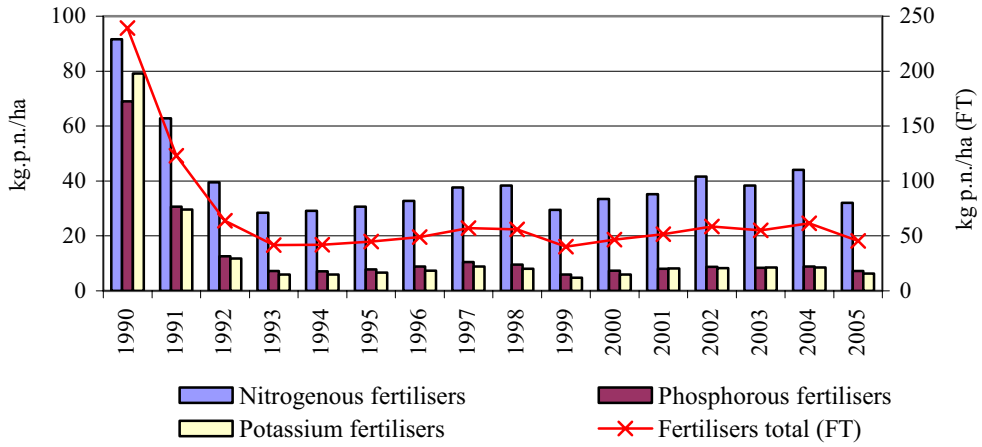
Agricultural plant	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
Winter wheat	22	23	22	23	24	25	28	28	34	37	41	45	57
Winter barley	10	10	11	8	9	10	11	11	13	14	11	14	14
Spring barley	26	25	26	27	24	22	23	24	21	24	28	29	30
Potatoes	44	48	60	72	70	67	69	75	78	81	90	103	101
Rapeseed	7	10	14	12	12	9	14	16	19	22	25	32	29
Sugar beet	28	37	40	52	58	61	63	52	53	42	42	38	41
Fodder beet	12	16	16	13	12	6	8	8	8	8	7	6	6

Source: RIPP

Fertilisers consumption

In 2005, consumption of **industrial fertilisers** decreased from the previous year and reached the level of 45.49 kg of pure nutrients per hectare of agricultural land.

Fertiliser consumption in Slovakia (kg pure nutrient/ha)

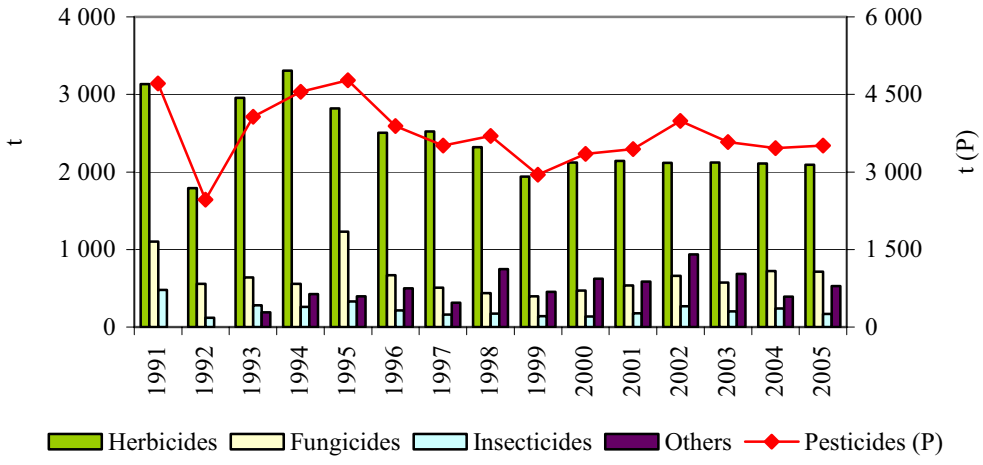


Source: CCTIA

Pesticides consumption

Compared to 2004, total consumption of pesticides in 2005 increased by 1.3%.

Pesticides consumption in Slovakia (t)

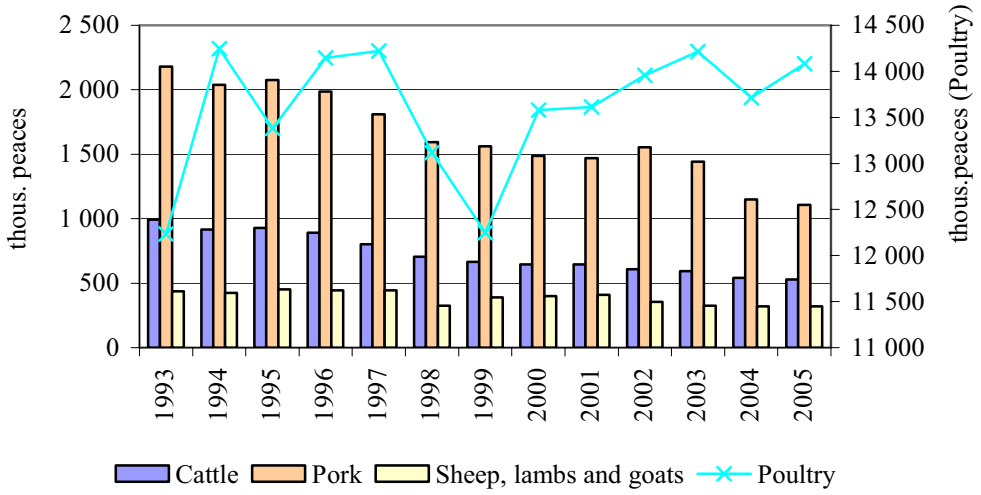


Source: CCTIA

Livestock production

In 2005, numbers of all livestock categories again decreased.

Livestock production in Slovakia (thousand peaces)



Source: SO SR, MoA SR

Genetic diversity expressed by number of livestock in the SR increased in cases of cattle and sheep, since 1993. There was a reduction in poultry and pork.

Number of livestock breed in the SR

Breed	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
Cattle	5	5	5	5	6	6	11	11	11	11	11	11	12
Pork	15	15	15	15	15	15	16	15	13	11	11	11	11
Sheep	8	9	10	9	9	12	12	13	12	12	13	13	13
Goats	2	2	2	2	2	2	2	2	2	2	2	2	3
Poultry	15	17	15	17	19	22	19	22	15	7	7	7	7

Source: RIAP

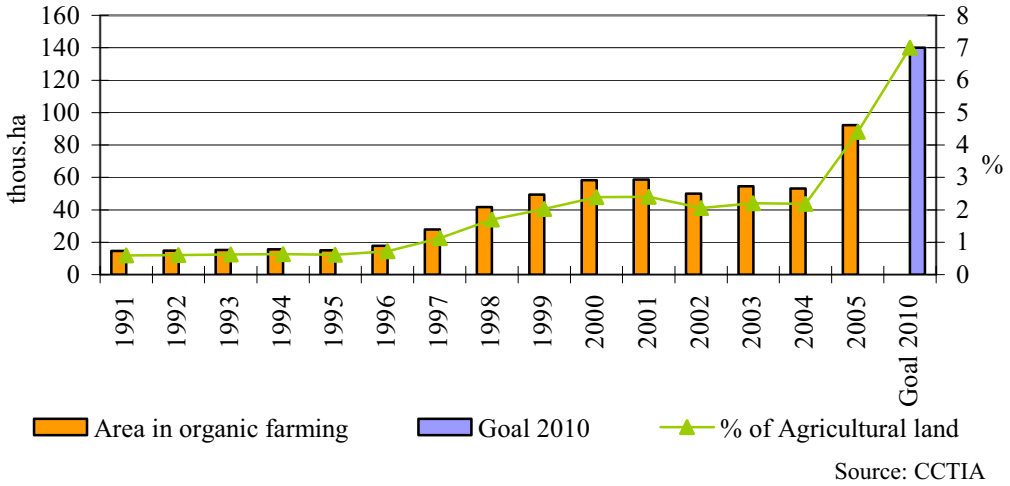
Melioration

After 2000, there was a falling trend in the size of irrigated territories, analogous as utilisation of water for irrigation purposes with certain fluctuations. In 2005, there was 44 789 ha of irrigated agricultural land.

Organic farming

In 2005, the system of organic farming in the SR included 210 subjects farming on 92 180 ha of agricultural land, which is 4.4 % of total agricultural land. The goal is to implement organic farming practices on 7 % of total agricultural land by 2010.

Trend in the organic farming area



Source: CCTIA

Agriculture demands in exploitation of resources

During 1998 – 2004, consumption of solid and liquid fuel in agriculture was falling, while the consumption of gas fuel increased.

Consumption of selected fuels in agriculture (thous. t)

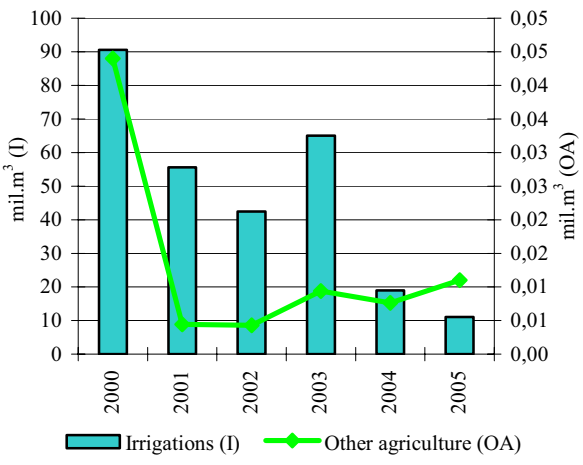
Kind of fuel	1998	1999	2000	2001*	2002*	2003*	2004*
Solid fuel	14 219	12 777	11 807	7 689	6 872	10 051	6 920
Liquid fuel	220 931	226 464	248 545	158 873	152 049	178 083	143 093
Gas fuel	14 445	13 559	14 542	61 528	74 834	71 492	64 469
Heat	129 156	114 675	83 258	78 155	77 950	42 809	60 213
Electricity	120 207	123 675	113 969	128 947	123 805	117 966	111 645
Renewable fuel sources and wastes	-	-	-	64	43	78	96

* new SO SR methodology

Source: SO SR

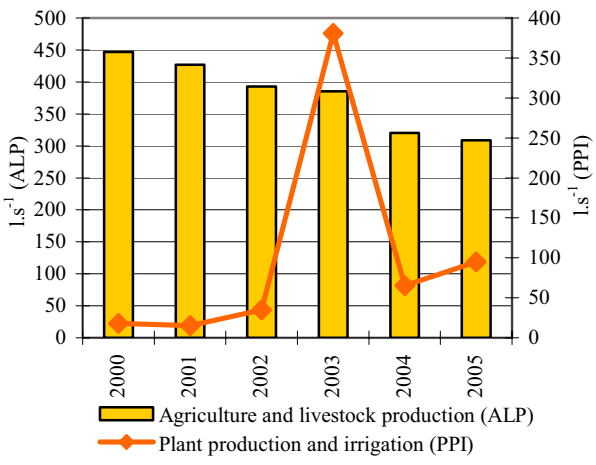
Compared to 2004, in 2005, there was a reduction in surface water volumes used in agriculture for irrigation purposes. Groundwater volumes used in agriculture and livestock production also dropped. On the other hand, volumes of groundwater used for crop production and irrigation increased.

Trend in surface water use in agriculture



Source: SHMI

Trend in underground surface water use in agriculture



Source: SHMI

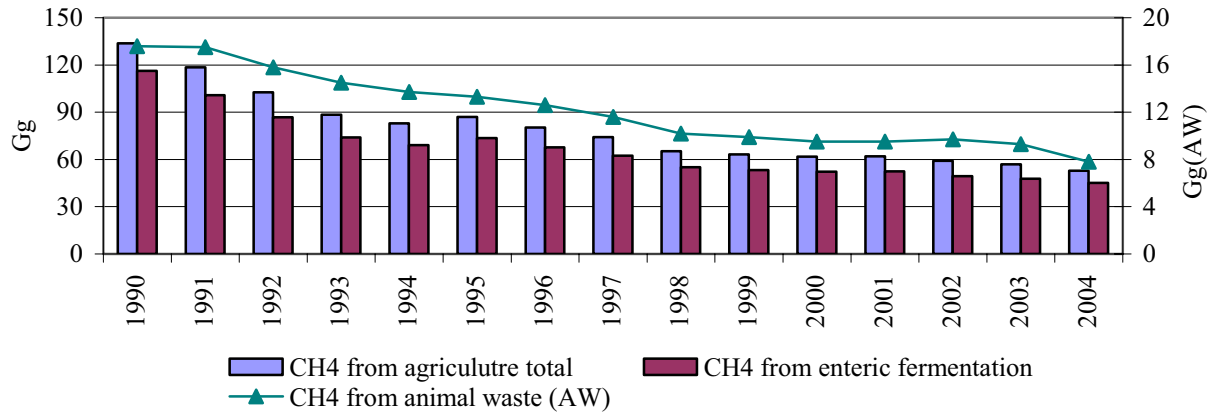
Production of renewable energy from agriculture

Despite its relatively high potential in Slovakia, use of the biomass for energy purposes is not satisfactory from the perspective of including energy-yielding produce into sowing technologies, as well as production of energy from biogas. In 2005, there were 3 biogas production facilities in operation in Slovakia. Biogas was produced from cattle manure at the volume of 470 thous.m^3. It is possible to expect the annual production of biogas from cattle excrements at 241 mil.m^3, and from pork excrements at 36 mil.m^3.

Impact of agriculture on environment

Share of agriculture on total methane production is systematically falling, due to decreased number of livestock. In 2004, agriculture produced 52.9 thous. tons of methane. In 2004, agriculture produced 8.9 thous. tons of nitrogen monoxide.

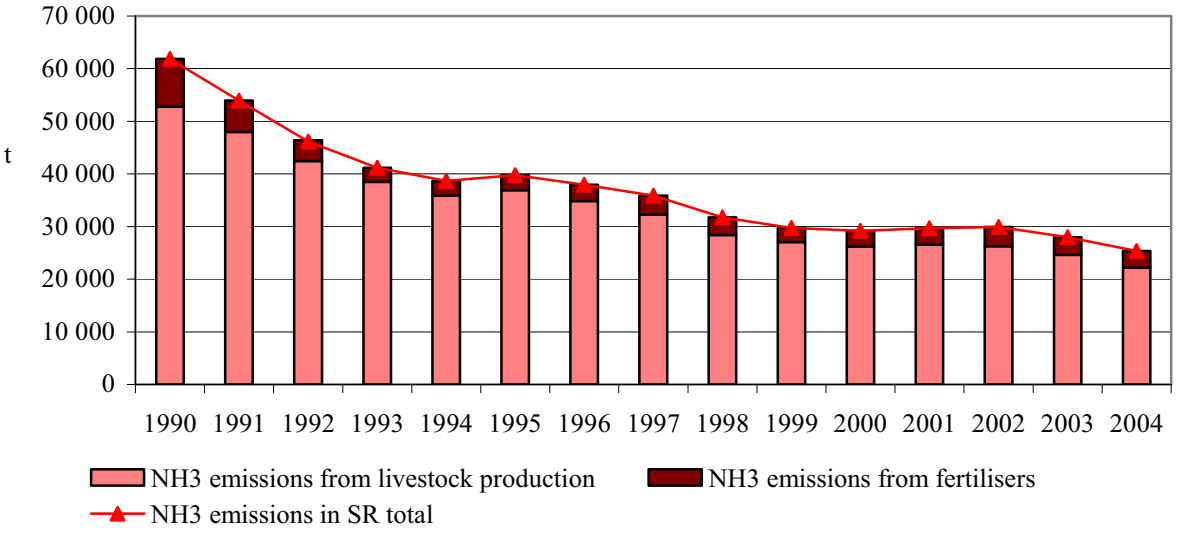
Trend in methane emissions from agriculture according to type of activity



Source SHMI

Agriculture is the biggest producer of ammonia (NH_3). NH_3 emissions showed a falling tendency since 1990.

Trend in ammonia emissions from agriculture



Source: SHMI

Impact of agriculture on water quality and quantity

In 2005, there was 561 689 m^3 of discharged wastewater, related with agricultural activities.

Discharged amount of waste water in SR related to agriculture in 2005

Waste water from agriculture	Volume ($m^3.yr^{-1}$)	Insoluble compounds ($t.year^{-1}$)	BOD_5 ($t.year^{-1}$)	COD_{Cr} ($t.year^{-1}$)	ENP ($t.year^{-1}$)
Treated	186 589	17.918	7.873	45.537	0.047
Untreated	375 100	0.302	0.037	0.156	0.0
Total	561 689	18.220	7.910	45.693	0.047

Source: SHMI

Production of waste in agriculture

In 2005, there were 661 068.24 tons of total waste produced in agriculture, which is 60 290.24 tons more that in 2004. Of total produced waste, other waste was 645 893.40 tons, which is 59 003.4 tons more than in 2004. Produced hazardous waste in 2005 was 15 174.84 tons of total waste volumes, which is 1 286.84 tons more than in 2004.

Forestry

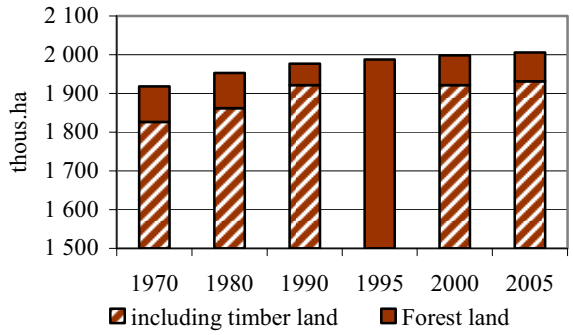
♦ Share of forestry on GDP production

Forest management in 2005 contributed to the GDP production by 0.59 %. The share would be higher (3 %) if public benefits of forests and wood-processing industry are accounted for.

♦ Structure of forest land

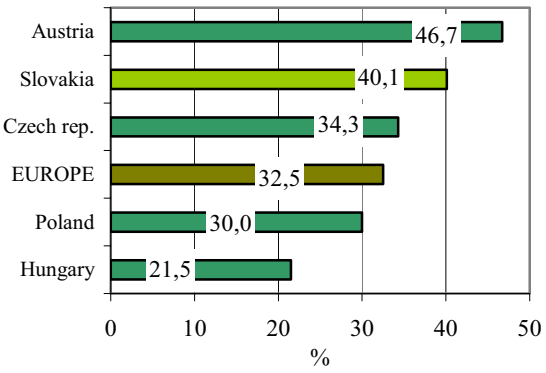
Slovak Republic belongs to the countries with the highest rate of **forestation. Forest land** in Slovakia in 2005 was **40.9 %** (2 006 172 ha) of total area of the state. Compared to 2004, it has been an increase by 574 ha. Timber land in 2005 represented app. 96.3 % (1 931 645 ha) of total size of forest land. Calculated to the number of inhabitants, this represents **3.72 km^2 per 1 000 inhabitants.** Size of forest land and timber land is increasing over a long run. Since 1970, size of forestland grew by 4.6 %, while the average annual increment over the monitored period is approximately 0.13 %.

Trend in forest land and timber land



Source: NFC

Comparison of forestation in selected countries

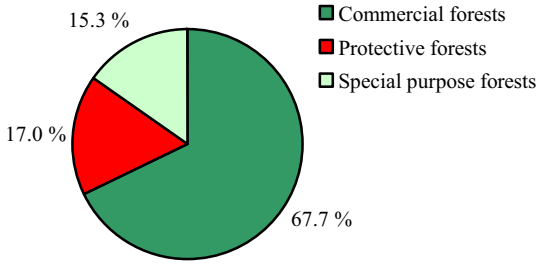


Source: Forest Resources of Europe, UN, 2000

The forest ownership and utilisation settling process governed by the restitution legislation has not yet finished. This causes permanent changes to forest structure by ownership and utilization. **State** organisations of forest management **administer 58.5 % of forests,** which is 16.7 % more than in the state ownership. In 2005, there was **10 954 ha** of forest land **returned** to original owners (7 863 ha less than in 2004). Forest land with no fully identified or documented ownership claims, or with no claims yet received from the entitled persons, take up **almost 6 %** of total SR forest land.

Due to the increased demand for public benefit functions of forests, there is a systematic increase in the area of protective forests (from 7.9 % in 1960 to the present 17 %).

Spatial representation of forest categories in 2005



Source: NFC

Overview of area according to function – protective forests (PF) and special purpose forests (SPF) (2005)

Function - PF	% of PF
Erosion control	12.7
Water management	3.8
Deflation control	0.2
Avalanche control	0.2
Bank protective	0.1
Function - SPF	**% of SPF**
Water protective	0.9
Recreational	1.9
Health resort-therapeutic	0.2
Nature protection	2.9
Air pollutants control	7.1
Game management	1.4
Education-research	0.9

Source: NFC

♦ **Forest composition by species and age groups**

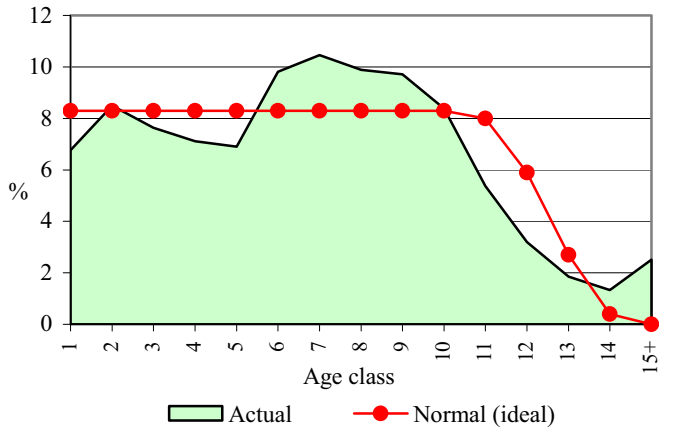
In terms of **forest composition by species**, there is a positive share of broad-leaved trees (59 %) compared to coniferous trees (41 %). There are **introduced tree types** commonly growing within broad-leaved tree vegetation areas. Their area has not increased over the recent decades (2.99 %), with the exception of *Robinia pseudoacacia.*

Comparison of present tree species composition in the forest of the SR with original and target-perspective one

Tree species	Tree species composition (%)		
	Original	Target - perspective	Actual
Spurce / Fir	4.9 / 14.1	18.2 / 6.7	26.3 / 4.1
Pine / Larch	0.7 / 0.1	4.2 / 6.7	7.2 / 2.3
Other coniferous	0.9	1.2	1.1
Coniferous together	**20.7**	**37.0**	**41.0**
Oak	19.9	17.7	13.4
Beech / Hornbeam	48.0 / 2.6	35.9 / 0.9	31.0 / 5.7
Maple /Ash	3.2 / 0.4	3.0 / 0.5	1.9 / 1.4
Robinia / Birch	- / 0.1	0.1 / 0.2	1.7 / 1.4
Elm / Alder	0.9 / 0.3	1.2 / 0.3	- / 0.8
Poplar / Willow	0.1 / 0.1	0.2 / 0.1	0.9 / -
Other broadleaved	3.7	2.9	0.4
Broadleaved together	**79.3**	**63.0**	**59.0**

Source: NFC

Age composition of the forest in 2005



Source: NFC

♦ **Forest transport network**

Average density of forest road network in Slovakia is 18.5 m.ha^{-1}, while the optimum density in our conditions fluctuates between 20 to 25 m.ha^{-1}. Length of outgoing forest roads in 2005 was **37 096 km**.

♦ Forestation and standing volume

In 2005, **13 504 ha were forested**, including 4 582 ha forested through **natural regeneration.** Share of natural regeneration has almost doubled since 1990 (currently, it represents 33.9 % of total forestation) and helps to enforce sustainable development practices in forests.

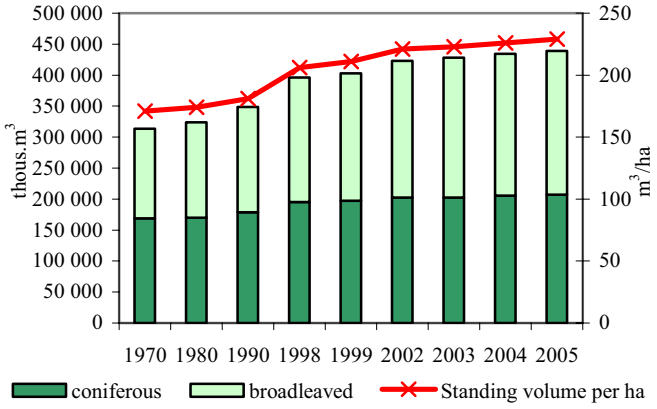
Standing volume in 2005 reached **438.9 mil. m^3** of barkless wood matter, with average stock per hectare reaching 229 m^3. Still increasing volume of wood stock is mainly influenced by the existing age composition of the Slovak forests, with abnormally high share of most-incremental medium age levels. **Total current increment** decreased since 1990 (through changes to the age composition) and is 11 584 thous. m^3. This trend may be considered linear since 2000.

Total standing volume in 2004, 2005

Indicator	2004	2005
Standing volume together (thous. m^3 d_{bh}>7 cm under bark)	434 400	438 905
Of that: Coniferous	205 623	207 354
Broadleaved	228 776	231 551
Standing volume per ha (m^3)	226	229

Source: MoA SR

Trends in total standing volume

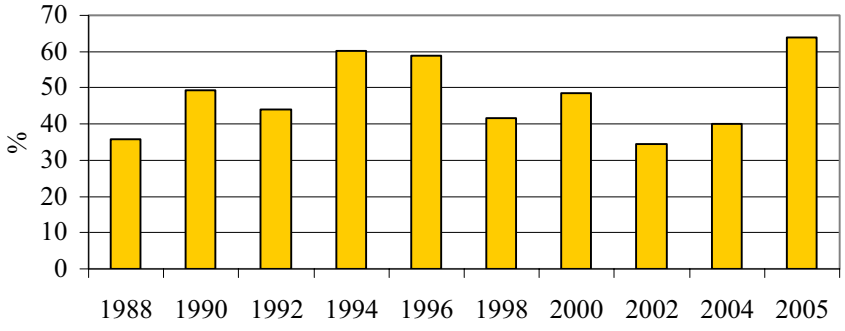


Source: NFC

♦ Timber felling

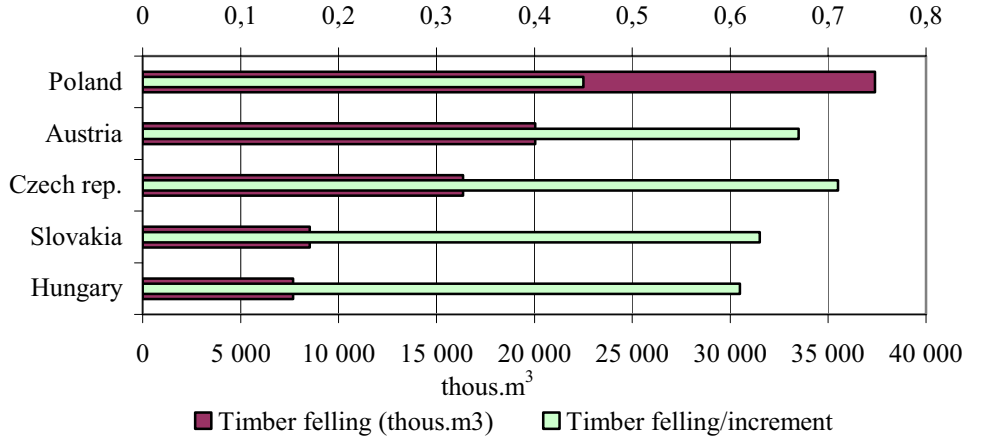
Timber felling in the Slovak forests shows an increasing tendency over a long range. In 2005, it was as much as **10.2 mil. m^3**, including 6.9 mil. m^3 of coniferous timber. Increased numbers were caused by the wind calamity of November 2004, which resulted in **64 % of incidental felling** of total timber felling (almost 89 % of coniferous and 12 % of broad-leaf trees harvested). Natural conditions in the SR forests allow implementing the shelter wood system on 70 % of timber land, selection harvest on about 10 %, and clear cutting on the remaining 20 % of timber land. **Intensity of forest resources utilisation** was as much as 88 % this year; however, it still points to the sustainable use of the SR forests (timber felling is lower than the annual increment).

Trend in share of incidental felling on total volume of timber felling in SR



Source: NFC

Comparison of utilisation of forest resources in selected countries

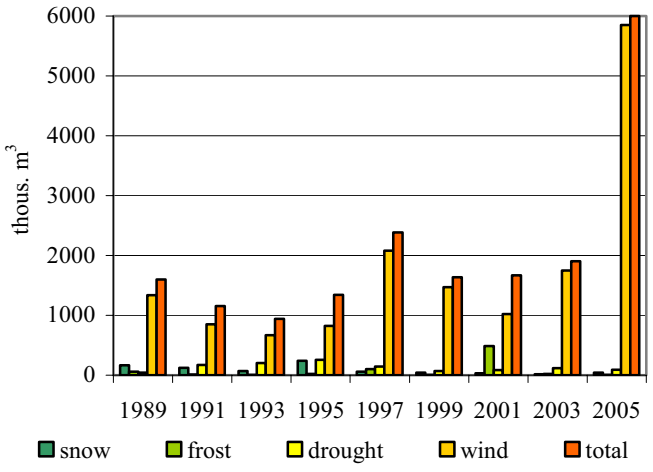


Source: UNECE/FAO (2000) and actualisation

♦ **Injurious agents and forests condition**

As a consequence of negative impacts of wind, snow, frost, drought, and unknown **abiotic factors,** there was **5 311 thous. m^3** of wood matter **processed** this year, with almost 98 % caused by the wind. Incidental felling **by wind** in 2005 was the major factor from all abiotic harmful factors. During 2005, there were only small wind clearings of local character. Damage caused by **snow** was slightly below average over the last decade. **Frost** caused only insignificant damage on forest vegetation in 2005. Most frequent damage was done to beechwood (2 thous.m^3). More significant damage was inflicted by **drought.** Drought shows a long-term negative impact on the pineries in Záhorie. **Unknown** abiotic factors damaged 14 thous. m^3 – with the whole volume processed.

Trend in damages caused by abiotic agents



Source: NFC

Damages caused by abiotic agents in 2005

Injurious agents	Attacked	Processed
Wind	5 848 943	5 177 337
Snow	45 426	33 059
Frost	3 949	3 931
Drought	89 320	82 623
Unknown reasons	14 038	13 856
Total	**6 001 676**	**5 310 806**

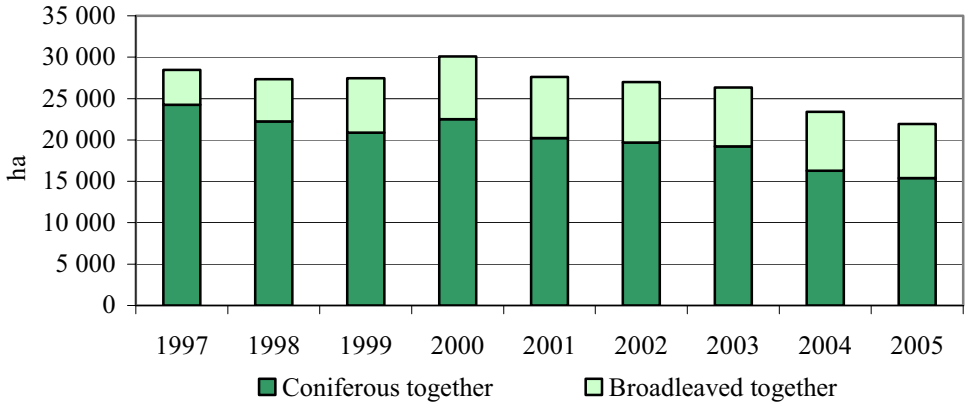
Source: NFC

Air pollution belongs among the major anthropogenic harmful factors. Forest land exposed and damaged by air pollution is more vulnerable to be damaged by abiotic and biotic factors. Damage by air

pollution was recorded on **21 917 ha** of forest land. Districts of Gelnica, Kežmarok, and Spišská Nová Ves show the most adverse situation.

There were **286 fires** on the territory of about 503 ha in Slovakia.

Trend of the air pollution forest damage



Source: SO SR

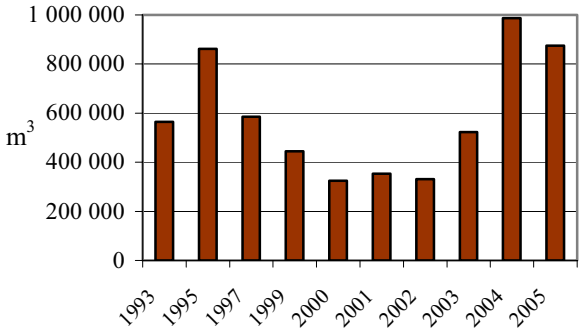
Of the **biotic harmful factors** of forest lands, bark-beetles and woodworms have the most dominant share on random incidental felling. Other harmful factors include leaf-eating and sucking insects, rots and tracheomycosis and game.

Ips typographus is the major harmful insect, attacking 899 thous. m^3 of wood matter in 2005. In general, situation in damaged vegetation by bark-beetles and woodworms is considered very negative. Most damaging of the leave-eating and sucking insects impacting the broad-leaf trees was *Lymantria dispar,* culminating in 2005. Damage to timberland by other species of leaf-eating and sucking insects in 2005 was lower than in the previous year. *Armillaria ostoyae* and *Heterobasidion annosum* that is becoming a major harmful agent especially in spruce vegetations on acidic substrates in Kysuce, Orava, the sub-Tatras regions, and in Spiš, are the major harmful **phyto-patogenic micro-organisms.** From the economy aspect, **wood-eating fungi** cause major damage (especially root and trunk rottenness). Spruce belongs to the most affected tree type, followed by fir, beech and pine. Total recorded damage caused by **game** was 12.309 mil. SKK.

The volume of damages caused by biotic injurious agents in 2005

Phytopathogenic microorganisms	217 213 m^3
Rots and tracheomycosis	30 711 m^3
Leaf-eating and sucking insects	16 431 ha
Bark beetles a wood borers	874 566 m^3
Game	1 097.2 ha
Together	**1 122 490.0 m^3 17 528.2 ha**

Trend of damages caused by bark beetles and wood borers



Source: NFC

♦ **Forest condition monitoring and assessment**

National programme of **forest ecosystems health condition monitoring** was implemented also in 2005. The programme operated 112 permanent monitoring areas (PMA) within the 16x16 km network (extensive monitoring), and 7 research PMAs (intensive monitoring). Both monitoring levels are part of the European network of monitoring areas within the UN/ECE ICP Forest Programme.

The following table shows the percentage of coniferous, broad-leaf, and total tree types with varying degrees of damage, since the beginning of the monitoring activities in the SR from 1987 until 2005. **Ratio of trees in the 2-4 degrees of damage is the determining factor for assessment of deterioration or improvement to the health condition of forests.** The year 1989 is considered most critical, when as much as 49 % of trees were classified into degrees of damage 2-4.

Results of forest condition monitoring in SR in 1987-2005

Year	Tree types	Representation of trees in various damage degrees in %							
		0	1	2	3	4	1-4	2-4	3-4
1987	Coniferous	11	36	41	11	1	89	53	12
	Broadleaves	26	47	22	5	0	74	27	5
	Total	19	42	32	7	0	81	39	7
1997	Coniferous	13	45	38	3	1	87	42	4
	Broadleaves	22	55	21	2	0	78	23	2
	Total	18	51	28	2	1	82	31	3
2000	Coniferous	18	44	35	2	1	82	38	3
	Broadleaves	29	57	13	1	0	71	14	1
	Total	25	52	22	1	0	75	23	1
2001	Coniferous	12	49	37	1	1	88	39	2
	Broadleaves	18	55	26	1	0	82	27	1
	Total	16	53	30	1	0	84	31	1
2002	Coniferous	8	51	38	2	0	92	40	3
	Broadleaves	23	62	14	1	0	79	15	1
	Total	17	58	23	1	0	83	25	2
2003	Coniferous	4	56	39	1	0	96	40	1
	Broadleaves	14	61	24	1	0	86	25	1
	Total	10	59	30	1	0	90	31	1
2004	Coniferous	4	60	35	1	0	96	36	1
	Broadleaves	16	64	19	1	0	84	20	1
	Total	11	62	26	1	0	89	27	1
2005	Coniferous	6	59	33	2	0	94	35	2
	Broadleaves	21	65	13	1	0	79	14	1
	Total	14	63	22	1	0	86	23	1

Description of damage degrees of monitored trees: Source: NFC

0 - defoliation of trees between 0 - 10 % no defoliation (healthy trees)
1 - defoliation of trees between 11 - 25 % slight defoliation (slightly injured trees)
2 - defoliation of trees between 26 - 60 % medium defoliation (medium injured trees)
3 - defoliation of trees between 61 - 99 % strong defoliation (strongly injured trees)
4 - defoliation of trees between 100 % dying and dead

Based on the results from foliage evaluation that have been collected since 1987 **the following may be concluded:**

– Of total number of 4 111 monitored trees in 2005, 22.9 % were damaged, i.e. with defoliation exceeding 25 % (degrees of defoliation 2-4).

- A worse situation exists with the coniferous trees, with 35.3 % of damage trees, while only 13.6 % of the broad-leaf trees are damaged. In 2005, percentage of damaged trees decreased, compared to the previous year. Mainly the numbers of damaged broad-leaf trees dropping by 6.3 % caused this situation.
- Average defoliation of all tree types together in 2005 is 22.3 %, including 26.2 % of coniferous, and 19.2 % of broad-leaf. Health condition of trees in 2005 was among the best recorded since 1987.
- In 2005, health condition of broad-leaf trees improved, compared to 2004. Changes to the health condition of coniferous trees were statistically insignificant.
- Major fluctuations recorded in individual years include climate factors, fruitage, and (especially being the case of oak) presence of leaf-eating insects. Health condition of coniferous trees has been **stabilised** since 1996 (average defoliation is between 26 – 28.3 %), in case of broad-leave trees, the situation shows more fluctuations between individual years.
- On the basis of the number of trees classified into the damage degrees of 2-4, health condition is worse than the whole-European average, caused mainly by worse health condition of coniferous trees.
- The least-defined tree types are hornbeam and beech. In long term, tree types with the greatest level of defoliation are fir and spruce.
- Compared to 2004, in 2005, worsened health condition measured by defoliation was observed only in pine. Hornbeam and ash showed the most significant decrease in average defoliation.
- Orava, Kysuce, and Spiš-Tatras area belong to the areas with the worst long-term health condition of forest.
- Intensive monitoring sites in 2004 recorded a decrease in the average sulphur deposition, with values in open area ranging from 6 to 11 kg.ha^{-1}, and 7 – 16 kg. ha^{-1} in forest land.
- Total nitrogen deposition was higher than sulphur deposition at all monitored areas, both in open area, as well as in forest land. This only proves that the acidification and eutrophication impacts of nitrogen gradually play a key role in relation to the health condition of forest vegetation.
- Properties of the soil solution also point to the rising significance of nitrogen ion transport in soil, compared to sulphur ions. A very strong local soil solution acidity exists, based on natural and deposition inputs.
- In 2004, ozone concentrations at monitored sites showed a typical annual trend with minimum average monthly concentrations in the winter season (October and December) and maximum average concentrations in the spring and summer seasons with double climax (March, August).

Results of tree defoliation in selected European countries in 2004

Country	Number of assessed trees	Degree of injury				
		0	1	2	3+4	2+3+4
Czech Republic	6 585	11.7	31.0	56.2	1.1	57.3
Hungary	28 313	39.9	38.6	15.6	5.9	21.5
Poland	25 520	8.3	57.1	32.5	2.1	34.6
Austria	3 582	51.4	35.4	10.4	2.8	13.1
Slovakia	**4 216**	**11.3**	**62.0**	**25.7**	**1.0**	**26.7**

Source: MoA SR

♦ **Hunting**

There were **1 806 hunting areas** in Slovakia in 2005, including 23 game protection territories and 16 pheasant territories. Average size of hunting areas was 2 456 ha (3 391 ha in 1990). Total size of the hunting territory is **4 436 461 ha**. There is 2 328 thous.ha of agricultural land, 1 980 thous.ha of forest land, 51 thous.ha of aquatic, and 78 thous.ha of other land. Number of hunting areas is increasing, while their average size is decreasing.

Spring initial numbers of the cloven-hoofed game excluding the wild boar as of December 31, 2005 were higher than in the previous year. This tendency exists since 1998. Further increase in the number of individual species of ungulates game, excluding roe deer, is undesirable because damage to the forest vegetation and agricultural produce inflicted by this game begin to increase again.

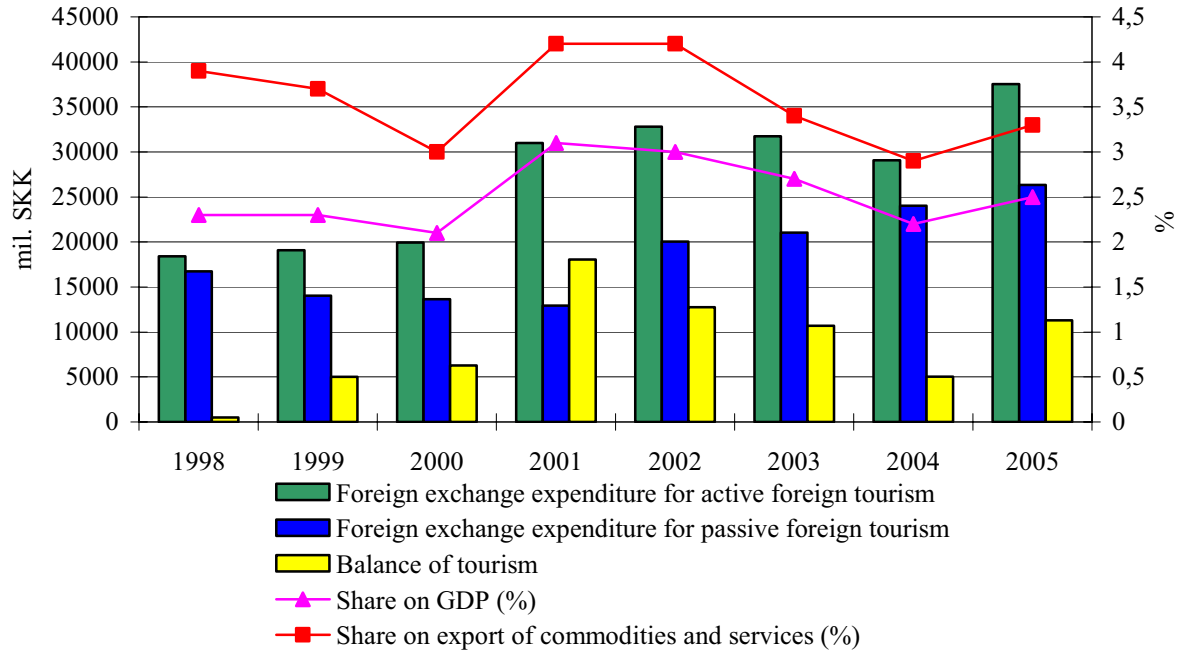
Shooting of **red deer, fallow deer, and mouflon** in 2005 was higher than in the previous year; however, the planned shooting quota was not reached. Shooting of **roe deer and wild boar** decreased. Spring initial numbers of pheasant, rabbit, and wild turkey increased. On the other hand, spring initial numbers of hare and partridge dropped. Numbers of **large predators**, with the exception of wildcat, increased statistically. These numbers are quite high. In terms of other **rare species** of animals, compared to the previous year, their numbers slightly decreased, with the exception of otter, black grouse, bison, and beaver. Hunting of rare game species is strictly regulated. Permitted shooting limit of **bear** was 66, while the actual number of shot animals was 35. Meeting the permitted shooting limit is stagnating over the recent years. Major cause of this situation is the limiting conditions set by the Ministry of Environment SR. 74 wolves and 8 alpine chamois were shot. A significantly higher number of chamois (625) was recorded than in the previous year (522).

Recreation and tourism

♦ Tourism and its contribution to the GDP

There was again a significant increase in revenues from tourism and its share on the GDP and export and import of goods and services in 2005.

Tourism and its share on GDP and export between 1998 – 2005



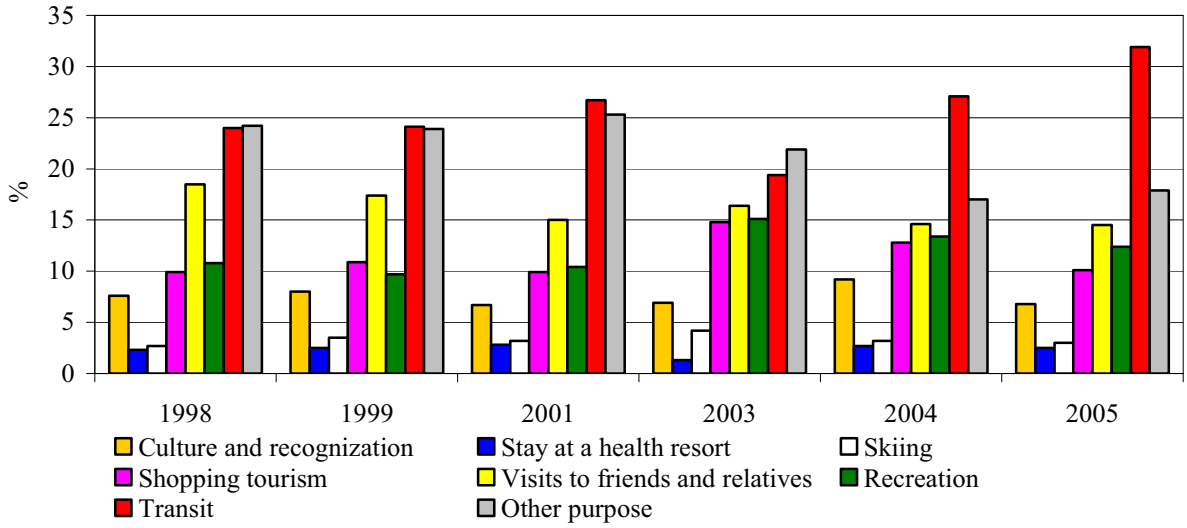
Source: SO SR

Note: Level of revenues in foreign exchange in 2001 is partially affected by transition to EUR toward the end of the year and the SR citizens placing foreign exchange on their foreign exchange accounts

♦ Specific analysis of recreation and tourism

Dominant purposes of the international tourists to Slovakia **include activities in accordance with the requirements of sustainable development;** however, **high and significantly rising numbers** (especially in the years 2003 – 2005) **of transit tourists** that bring only a small economic growth into the country along with some negative environmental impacts, are a **major challenge.** The same may be said of the international clientele's broad number of interests over the course of the whole year, as well as individual types of tourism. Data collected for individual regions and towns may vary significantly.

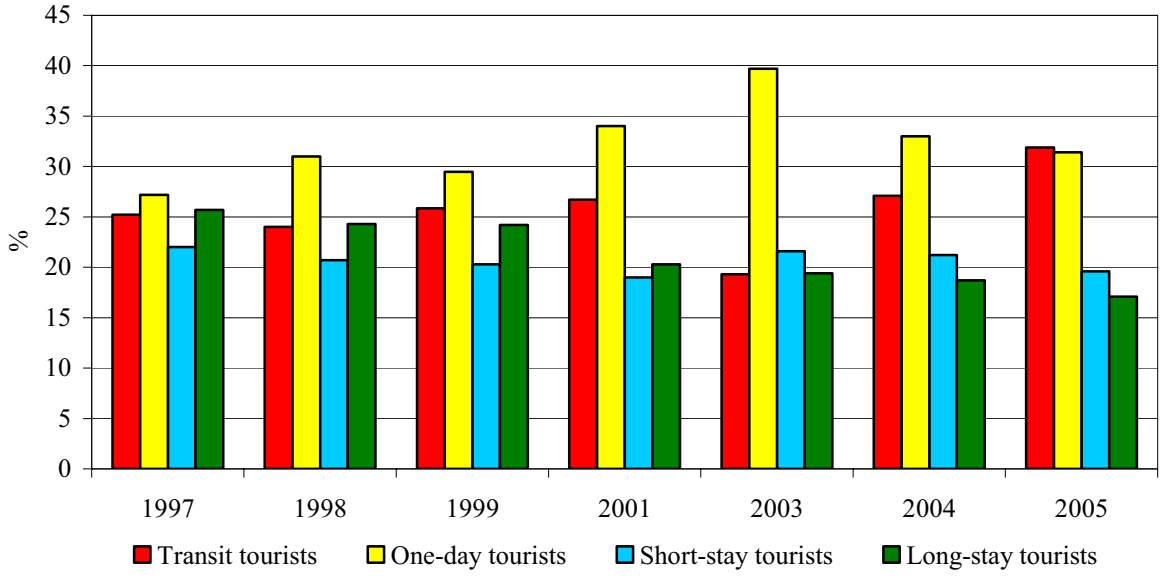
Tourist purposes and profiles of the foreign visitors of Slovak Republic (%) between 1998 – 2005



Source: MoE SR

Structure of international visitors by the length of stay is not positive. On one hand, number of transit tourists was increasing in the years 2003-2005, on the other hand, number of short-stay and especially long-stay tourists decreased. Most significantly decreased factor **over the period of 1996-2005** was **the percentage of long-stay tourists.**

Types of the foreign visitors of Slovak Republic (%) between 1997 - 2005



Source: MoE SR

Increase in the bed capacity of accommodation facilities in 1998 - 2003 can be assessed positively as this increase has been caused especially by increase in the number of more affordable, small environment friendly accommodation facilities – pensions and hostels. **In 2004 - 2005,** this

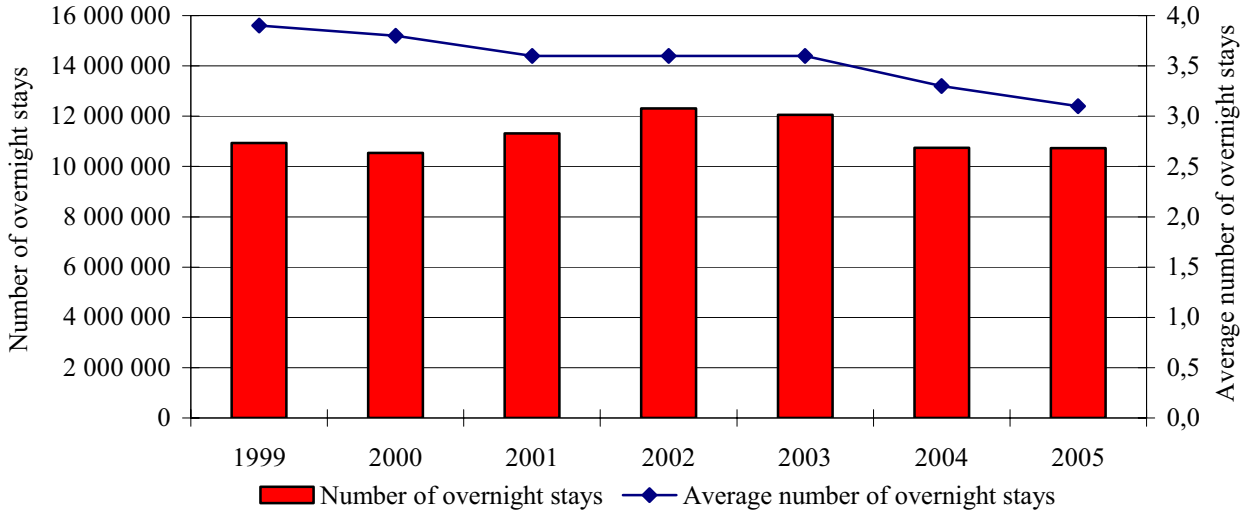
positive trend stopped, while today there is **stagnation in the number of beds** in all categories of accommodation facilities.

Capacity of tourism accommodation (number of bed places) in Slovak Republic between 1999 - 2005

Source: SO SR

Notwithstanding the fluctuating characteristics of statistical data, **number of overnight stays** is still stagnating. Most importantly; however, **average number of overnight stays** decreases continually. This relates to the attractiveness of the tourist destination and the level of development of its infrastructure. This is what influences the length of actual stays.

Overnight stays in tourism accommodation between 1999 – 2005



Source: SO SR

♦ **Demand of tourism on exploitation of resources**

In terms of national economy, **tourism with its little demand on material resources does not represent a significant demanding sector.** This fact is especially important for a country like Slovakia that depends much on export. **Demand of tourism on the exploitation of natural resources and land occupation** is **important especially on the local** level. This phenomenon is caused by major seasonal differences in the number of tourists to individual tourist destinations. Compared to other economic activities, it is not possible, for example, to supply data on the energy and material demand of tourism, because of the lack of good data retrieving and collecting mechanisms to meet specific indicators.

♦ **Environmental impact of recreation and tourism**

In terms of the environmental quality, there is a significant differentiation that represents a major potential for the development of tourism in Slovakia. On one hand, 65.74 % of the Slovak territory falls into the I. and II. environmental quality degrees (environment with high quality, i.e. acceptable), on the other hand, as much as 66.02 % of inhabitants live on the territory classified under the III., IV., and V. environmental quality degrees (environment slightly impaired, impaired, and extremely impaired).

Intensity of tourist visits is not regularly spatially distributed. Sites for mountain tourism activities are concentrated within The Tatranský National Park (Roháčska valley in the West Tatras, and Mlynická, Mengusovská, Velická, Malá, Veľká Studená, and Skalnatá valleys), The Nízke Tatry National Park (Demänovská and Jánska valleys, and northern slopes of Chopok, Bystrá valley, and southern slopes of Chopok), and The Malá Fatra National Park (Vrátna valley).

Especially by inclusion of territories of new national parks – The Slovenský kras National Park and The Veľká Fatra National Park since 2002, there has been **increase in distance of marked cycling trails and marked hiking trails** on the territory on national parks. In terms of density of such marked tourist trails, the most fragmented territories, in terms of their size, are areas of The Pieniny National Park, The Muránska planina National Park and The Slovenský raj National Park.

Number of locations for so called active sports in national parks behind the border of municipal construction zones (§14, part 1, letter b, c, d) of the Act No. 543/2002 Coll. on Nature and Landscape Protection between 2001 - 2005

Name of protected area	Mountain cilimbing and rock climbing	Skialpi-nism	Camping, bivouac	Ski areas	Cross country skiing **	Bicycle marked paths **	Hiking marked paths **
♦ **The Tatranský National Park**							
2001	whole area*	6				150/0.20	600/0.81
2002	whole area*	6				150/0.20	360/0.49
2003	whole area*	6	1	7	108/0.14	150/0.20	690/0.93
2004	whole area*	6	1	7	108/0.14	150/0.20	690/0.93
2005	whole area*	6	1	7	108/0.14	150/0.20	690/0.93
♦ **The Nízke Tatry National Park**							
2001	4	1				201/0.25	800/0.98
2002	4	1				201/0.25	800/0.98
2003	4	1	6	6		201/0.25	800/0.98
2004	4	6 (3 areas, 2 trails, 1 locality)	7	6	40 + suitable marked hiking paths	718/0.39 (include protective area of the national park)	800/0.44 (include protective area of the national park)
2005	4	6 (3 areas, 2 trails, 1 locality)	7	6	40 + suitable marked hiking paths	718/0.39 (include protective area of the national park)	800/0.44 (include protective area of the national park)
♦ **The Malá Fatra National Park**							
2001	1	1				0	157/0.69
2002	1	1				0	157/0.69
2003	1	1		2		0	157/0.69
2004	1	1	-	2	-	-	157/0.69
2005	5	-	4	2	15 + 157 km of marked hikung paths	35	157/0.69
♦ **The Pieninský National Park**							
2001	0	0				15/0.4	60/1.6
2002	0	0				15/0.4	60/1.6
2003	0	0	2	1	9	15/0.4	60/1.6
2004	-	-	1	1	9	15/0.4	60/1.6
2005	-	-	2	1	22	15/0.4	60/1.6
♦ **The Slovenský raj National Park**							
2001	1	0	3	5	1	60/0.3	275/1.39
2002	1	0	3	5	1	44,5/0.2	215/1.09
2003	5***	0	3	5	1	44,5/0.2	215/1.09
2004	5***	-	3	5	1	44,5/0.2	215/1.09

2005	5**	-	3	7	50 + suitable marked hiking paths (include protective area of the national park)	118,5/0.1 (include protective area of the national park)	215/1.09
♦ **The Muránska planina National Park**							
2001	3	0				0	318/1.57
2002	1	0				0	318/1.57
2003	1	0				0	318/1.57
2004	2	0	3	0	26	13/0.06	318/1.57
2005	2	-	3	-	26	13/0.06	318/1.57
♦ **The Poloniny National Park**							
2001	0	0				0	119/0.4
2002	0	0				0	119/0.4
2003	0	0	2	1	0	0	119/0.4
2004	0	0	2	1	0	0	119/0.4
2005	-	-	2	1	119/0,4	44	119/0.4
♦ **The Slovenský kras National Park******							
2001							
2002	1	0				38/0.19	270/0.78
2003	1	0				38/0.19	270/0.78
2004	1	0				38/0.19	270/0.78
2005	1	-	-	-	-	38/0.19	270/0.78
♦ **The Velka Fatra National Park******							
2001	3	0				100/0.25	200/0.5
2002	3	0				100/0.25	200/0.5
2003	3	0	0	3	0	100/0.25	299/0.74
2004	5			3		100/0.25	299/0.74
2005	8	1	6	3	300	103/0.26	300/0.74
♦ **Together**							
2001						**526/0.16**	**2 529/0.8**
2002	**9 + The Tatranský National Park**	**8**				**548/0.17**	**2 499/0.79**
2003	**15 + The Tatranský National Park**	**8**	**14**	**25**	**118**	**548/0.17**	**2 928/0.92**
2004	**18 + The Tatranský National Park**	**13**	**17**	**25**	**184 + The Nízke Tatry National park**	**1 078.5 km**	**2 928 km**
2005	**25 + The Tatranský National Park**	**13**	**28**	**27**	**680 + suitable marked hiking paths**	**1 134.5**	**2 929 km**

Source: SNC SR

* - except for 8 localities defined in the Visiting order of national park, where climbing is forbidden
** - in case of cross country skiing, cyclo-tourism and hiking, information is available on length of the marked tracks, marked bicycle paths and of the marked hiking paths in km or in km/km^2.
***- include climbing the ice falls
**** - Slovenský kras a Veká Fatra were proclaimed national parks in 2002

Increase in length of erosion-impacted tourist marked trails presents a significant environmental issue. These trails are in the zone above the upper forest border and in precipices where, due to extreme climate conditions, exist greatly deteriorated local conditions for regeneration of soil and the flora. **Critical soil erosion** may be seen at marked tourist trails **in the territory of The Nízke Tatry National Park, The Malá Fatra National Park** (substantial erosion increase over the years 2002-2003), and **The Muránska planina National Park** (substantial erosion increase over the years 2004-2005). **Significant erosion** exists also **in the territory of The Slovenský raj National Park**. In 2004-2005, **significant increase in erosion of marked tourist trails was recorded** also in the territory of the **The Tatranský National Park**.

Erosion of soils on marked hiking paths and marked bicycle paths on the territory of national parks betweeen 2001 - 2005

Year	Overall length of the marked bicycle paths affected by erosion (km/% of the total length)	Overall length of the marked hiking paths affected by erosion (km/% of the total length)
2001	2/0.38	576/22.7
2002	7.5/1.37	630/25.2
2003	12/2.19	732/25.0
2004	13.8/1.3	778/26.6
2005	17/1.5	878/30.0

Source: SNC SR

Highest degree of endangerment of small-size protected areas from tourism exists in the following territories: The Tatranský National Park, The Nízke Tatry National Park, The Malá Fatra National Park, The Pieniny National Park, The Slovenský raj National park, The Malé Karpaty Protected Landscape Area, The Strážovské vrchy Protected Landscape Area, The Poľana Protected Landscape Area and The Vihorlat Landscape Area.

Healthy conditions of living and working conditions shall be created and secured by conservation of air, water, land and other elements of environment...

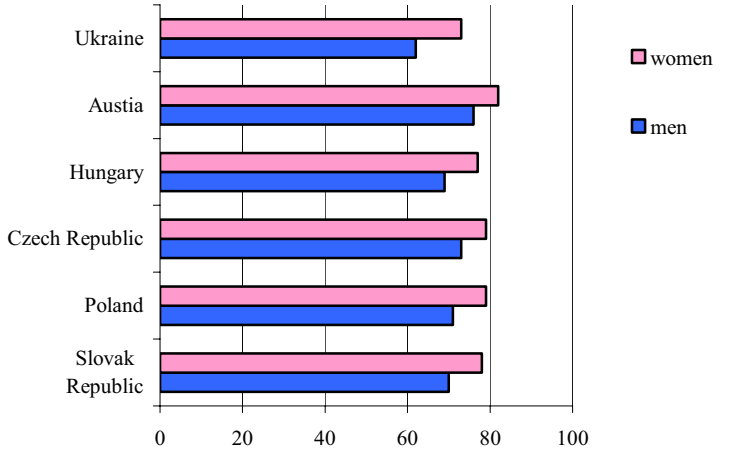
§13a of the Act No. 272/1994 Coll. on Protection of Human Health as subsequently amended

• PUBLIC HEALTH

Life expectancy at birth

In 2005, **average life expectancy at birth** reached 70.1 years in men. The trend is rising in women, reaching 77.9 years. **Average age** of the living Slovak population increased to 35.8 in men and 39.0 to women in 2004. However, it is still approximately 3 years lower than the average age of the EU population.

Comparison of life expectancy at birth in selected countries (2005)

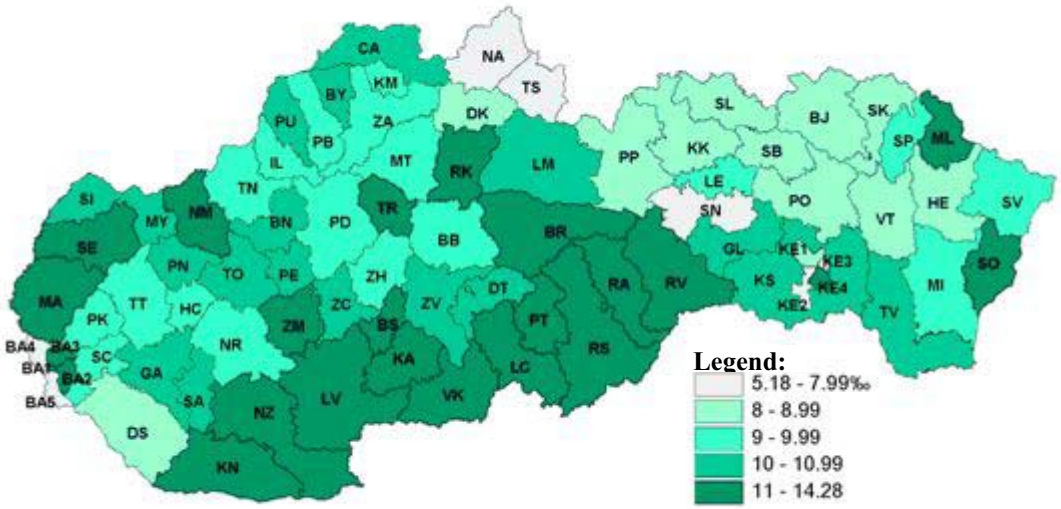


Source: WHO

Morbidity and mortality

In 2005, 28 151 thousand men and 25 324 thousand women died in Slovakia, which represents an increase by 847 in men, and 776 in women, compared to 2004.

Number of dead in 1 000 inhabitants according to districts in 2005

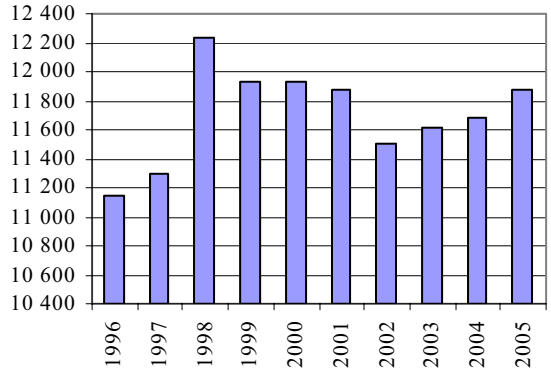


Source: SO SR

Greatest public mortality both in men and women over a long time period has been from **circulatory system diseases**, with 29 131 deaths, which is 47.9 % in men and 61.9 % in women. Most deaths are caused by acute heart attack and vascular cerebral disease. Second most frequent cause of death for both, men and women, are still **tumors**. Cancer shows a rising tendency, with 11 874 deaths in 2005, which is 24.7 % of men and 19.4 % of women. Most frequent causes of death are tumors of the pharynx, trachea, bronchi, and lungs, as well as malignant tumors of the stomach, colon and rectum. In men, third most frequent cause of death is **injuries and poisonings** (8.7 %). In women, third cause of death is **diseases of the respiratory system** (5.2 %).

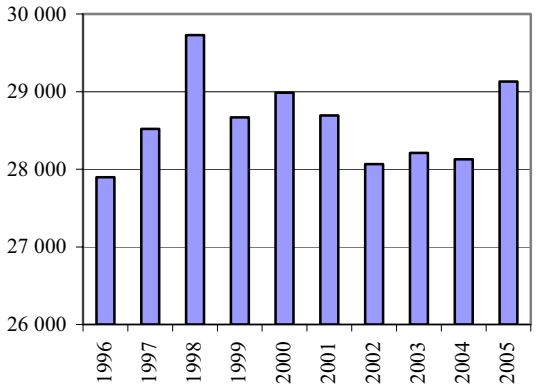
Basic factors influencing mortality of Slovak inhabitants

Cancer



Source: SO SR

Circulatory system diseases



Source: SO SR

A slight increase in infant and neonatal mortality is a negative trend. **Infant mortality** increased to 7.2 ‰ in 2005, compared to the previous year. In the case of **neonatal mortality,** there was an increase from 3.9 ‰ in 2004 to 4.1 ‰ in 2005.

Public Health – selected indicators

Indicator	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
Life expectancy at birth • Men • Women	 68.8 76.6	 68.9 76.7	 68.6 76.8	 68.95 77.03	 69.15 77.23	 69.51 77.54	 69.77 77.57	 69.76 77.62	 70.29 77.82	 70.1 77.9
Live-born/1 000 inhabitants	11.2	11.0	10.7	10.4	10.2	9.5	9.5	9.6	10.0	10.1
Deaths under 1 year/ 1 000 live-born	10.2	8.7	8.8	8.3	8.6	6.2	7.6	7.8	6.8	7.2
Neonatal mortality	6.9	5.4	5.4	5.1	5.4	4.1	4.7	4.5	3.9	4.1
Number of deaths	51 236	52 124	53 156	52 402	52 724	51 980	51 532	52 230	51 852	53 475
Deaths per 1 000 inhabitants	9.5	9.7	9.9	9.7	9.9	9.7	9.6	9.7	9.6	9.9

Source: SO SR

NEHAP III – National Environmental and Health Action Plan of the Slovak Republic III is a significant strategic document developed in 2005. Its major objective is to minimize the risks associated with environment and preserve the environment is such a state that the health of people, including children, is not threatened but positively developed. Besides demographic data relating to health and environment, the Action Plan also contains assessment of the NEHAP II implementation in the SR, implementation of the Action Plan for environment and children's health in Europe, definition of principles and objectives, its institutional feasibility, especially further developing of the high priority environmental and health areas. There are 43 measures proposed, with assumed implementation in the years 2006-2010. The NEHAP III program includes the following units:

1. **Action plan for environment and children ´s health – 4 regional priority objectives**
2. **Human bio-monitoring**
3. **Information system of environment and health**
4. **Climate changes and health.**

Approval of the **National Environmental and Health Action Plan of the Slovak Republic III (NEHAP III)** is expected to take place in the beginning of 2006.

Exploitation of nuclear energy must be justified by the contribution, which would counterbalance eventual risks originating from such activities, especially in comparison with other ways, which can be used to reach the same goal.

§ 3 par. 3 of the Act No. 541/2004 Coll. on Peaceful Exploitation of Nuclear Energy (Nuclear Act)

ENVIRONMENTAL RISK FACTORS

• PHYSICAL RISK FACTORS

Radiation protection

Institutions dealing with radiation protection and safety of ionising radiation sources **in the SR**:

- **Slovak Hydro-meteorological Institute** (SHMI)
- **Office of Civil Protection** (OCP SR)
- **Armed forces of the Slovak Republic** (ASR)
- **Slovenské elektrárne, a.s.** (Slovak electric power plants) (SE) that operate the nuclear power facilities of Jaslovské Bohunice NPP EBO) and Mochovce (NPP EMO) also monitor the radiation situation in the vicinity of these facilities
- **Nuclear Regulatory Authority** (NRA SR)
- **Ministry of Health of the SR** (MoH SR)
- **Headquarters of radiation monitoring network of SR** (HRMN SR)

♦ **Air dose equivalent rate**

Pursuant to HRMN SR, input of the external photon dose equivalent in air **H** ($nSv.h^{-1}$) in 2005 in the early alarm networks of in the whole SR territory reached the average value of 117.2 $nSv.h^{-1}$. Average annual effective dose **E** (μSv) for the whole SR territory was 782.25 μSv in 2005.

♦ **Air Contamination**

Air contamination has continually been monitored by measuring the volume activity of individual radio nuclides in **aerosols** extracted in the ground atmospheric level. Their ^{137}Cs concentration in Slovakia in 2005 reached the maximum level of 19.8 ± 1.5 $\mu Bq.m^{-3}$.

In 2005, no major air contamination by radionuclides was detected, ^{137}Cs radionuclide concentration in **radioactive fallout,** originating in the upper atmospheric layers as a result of nuclear weapons tests, was at the level of 3.2 ± 0.6 $Bq.m^{-2}$ in Slovakia.

- **Contamination of other environmental elements**

Soil contamination by the ^{137}Cs radionuclide in 2005 was at 158.5 ± 32 $Bq.kg^{-1}$. Average activity of the ^{137}Cs radionuclide **in water** in 2005 was below 5.27 $mBq.l^{-1}$. Tritium activity **in surface water** was at the level of 179.5 ± 3.4 $Bq.l^{-1}$. Tritium activity **in drinking water** in 2005 was 116 ± 3.1 $Bq.l^{-1}$.

- **Contamination of foodstuff and agricultural products**

Of all man-made radionuclides, in 2005, just like in the previous years, it was possible to detect in food samples only the ^{137}Cs radionuclide. Its contents in all measured commodities – excluding grasses and fungi – were around the level of units of $Bq.kg^{-1}$, or rather $Bq.l^{-1}$.

- **Radon and its radioactive decay products**

The largest source of **natural ionising radiation** is **Radon** and the **products of its radioactive change.**

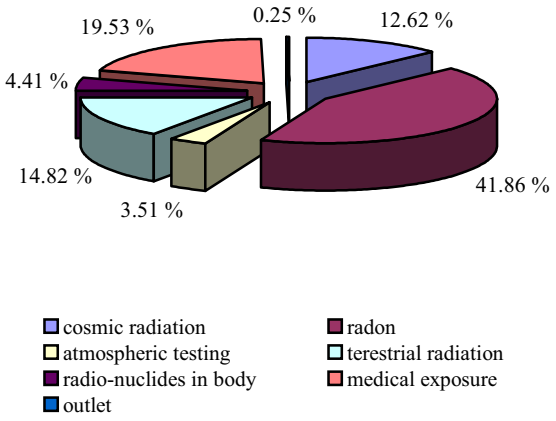
Outcomes from the volume Radon activity (OAR) monitoring in the SR households suggest that the areas with most OAR exposition are on the territory of East Slovakia – in the area of Slovenské Rudohorie. Highest values of the equivalent volume Radon activity (EOAR) were recorded inside old family houses with no cellar, especially in the ground-level rooms. This fact suggests that the main Radon source in the SR households is Radon found in the soil air. This relates to the increased Uranium concentrations in the geological aquifer, as well as to the geological structure of territory.

Radiation load of the population from natural radio-nuclides in year 2005

Source of radiation	Radiation load	
	Person (mSv)	Population (10^5 manSv)
Natural background together.	**2.40**	**650**
from that:		
- cosmic radiation	0.39	
- terestrial gama radiation	0.46	
- radio-nuclides in body	0.23	
- radon and the products of mutation	1.30	
Medical exposure together.	-	**165**
from that:	0.59	90
- diagnostics	-	75
- radiotherapy		
Atmospheric testing of nuclear weapons	-	30
Radio-nuclides outlet	-	2

Source: PHA SR

Percentage of individual sources of radiation of the population in the year 2005



Source: PHA SR

Average OAR values with estimated average whole-year effective E dose per capita from Radon exposition in households in individual regions in 2004

Region	OAR (Bq.m^{-3})	E (mSv)
Bratislavský	53	0.88
Trnavský	88	1.47
Trenčiansky	98	1.64
Nitriansky	140	2.35
Žilinský	103	1.72
Banskobystrický	145	2.44
Prešovský	93	1.55
Košický	133	2.23
SR	**108**	**1.81**

Source: PHA SR

Districts with highest average OAR values – with estimated average whole-year effective dose per capita from exposition to Radon and its daughter compounds in residential areas in 2004

Region	OAR (Bq.m^{-3})	E (mSv)
Rožňava	318	5.33
Krupina	268	4.49
Zlaté Moravce	260	4.37
Rimavská Sobota	255	4.28
Gelnica	215	3.61
Košice okolie	210	3.53
Banská Štiavnica	208	3.49
Brezno	200	3.36
Veľký Krtíš	190	3.19
Spišská Nová Ves	188	3.15

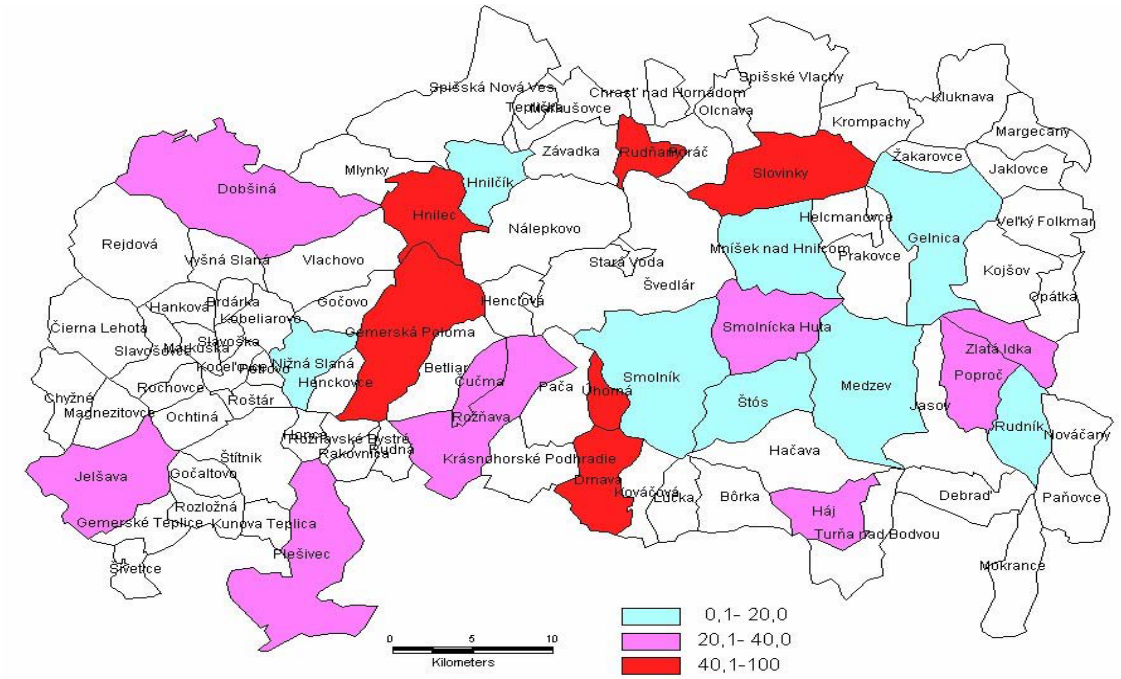
Source: PHA SR

Additional lungs cancer deceases for 100 thousand inhabitants annually as result of exposure of population to radon in indoor facilities

Region	Men	Women	Population
Bratislavský	9.60	4.37	6.87
Trnavský	15.94	7.25	14.42
Trenčiansky	17.75	8.07	12.71
Nitriansky	25.35	11.54	18.16
Žilinský	18.65	8.49	13.36
Banskobystrický	26.26	11.95	18.81
Prešovský	16.84	7.67	12.06
Košický	24.08	10.96	17.25
SR	**19.56**	**8.90**	**14.00**

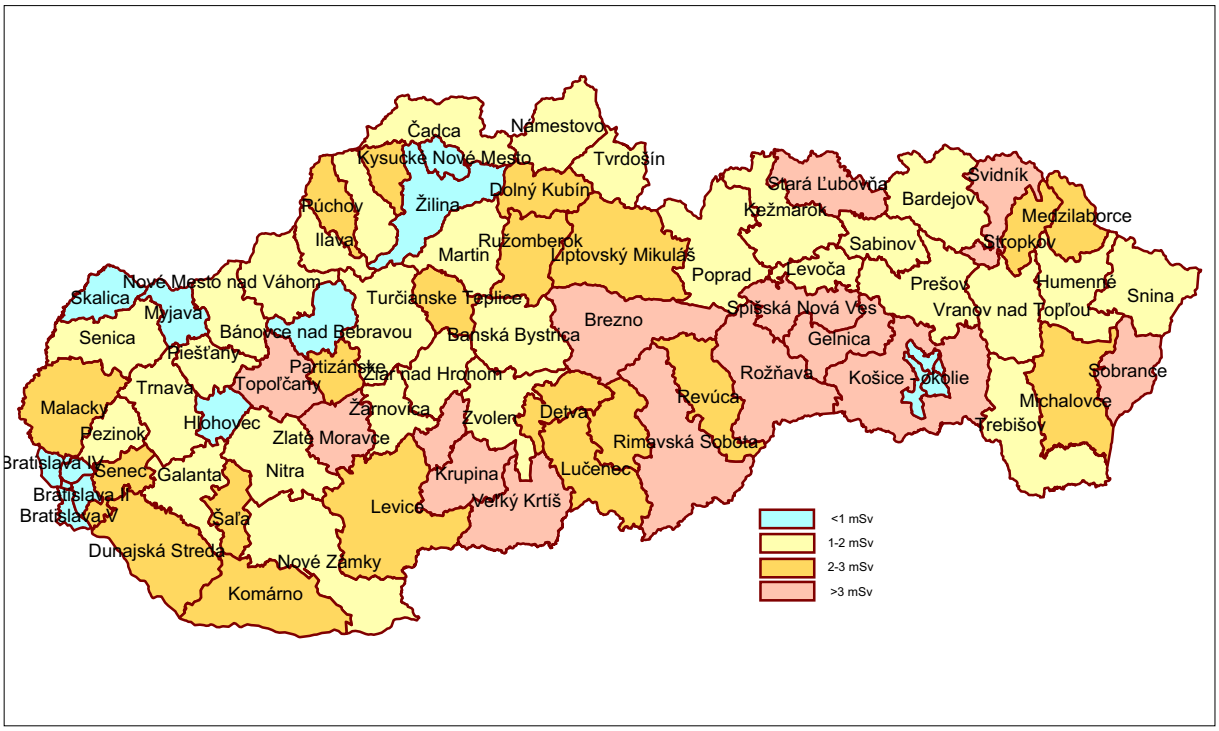
Source: PHA SR

Overview of districts by percentage of residential areas that extend beyond the reach of the OAR area



Source: PHA SR

Average year long effective amount for one inhabitant from inhalation of radon and its filial products in residential places in the regions of SR in year 2004



Source: PHA SR

Nuclear institutions

List of operated nuclear power plants in the SR

Nuclear Power Plant (NPP)	Start of operation	Reactor type	Operator
NPP Bohunice V-1	1978, 1980	VVER 440/230	SE
NPP Bohunice V-2	1984, 1985	VVER 440/213	SE
NPP Mochovce 1,2	1998, 1999	VVER 440/213	SE

Source: SE

State Inspection of Nuclear Safety with handling radioactive waste and burnt nuclear fuel is carried out by the **Office of Nuclear Supervisions of the SR** (NRA SR). The Act No. 541/2004 Coll. on peaceful exploitation of nuclear energy (**"Atomic Act"**) is the basic instrument for peaceful use of nuclear energy. NRA SR is an independent central state administration authority, headed by the Chief Officer. The **Institute of Public Health** (PHA SR) ensures **state supervision over radiation safety** under the Act No. 272/1994 Coll., as amended.

Slovakia is a signatory to all major international agreements and conventions in the area of peaceful exploitation of nuclear energy.

- **Activity of nuclear institutions in SR**

NPP V-1 Bohunice (NPP EBO V-1)

Since 1990, the NPP EBO V-1 has permanently been implementing safety improvements in order to increase nuclear safety in this power plant, following the recommendations of the International Atomic Energy Agency (IAEA). Although the planned activities of the programme to ensure safety were ended in 2000, much attention is still paid to further increasing of nuclear safety.

With both NPP – EBO V-1 blocks in operation in 2005, there were 8 occurrences, 6 of them within the INES 0 degree, and none in the INES 1 degree. Total number of occurrences has been successfully reduced to the level of previous years. The number of fast automatic shutdowns – that equalled to zero in 2005, showed analogical positive tendency.

NPP V-2 Bohunice (NPP EBO V-2)

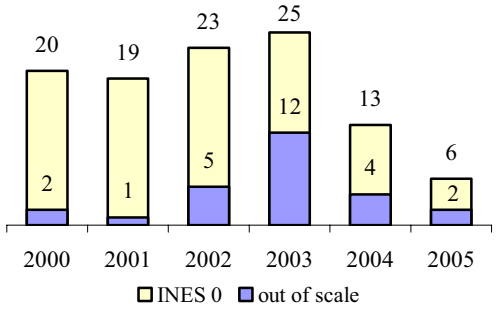
In 2005, the NPP V-2 blocks met the demands of the energy control centre. These NPP blocks served as the heat source to distribute heat to Trnava, Hlohovec, and Leopoldov.

The programme called "Modernisation and increase of the NPP V-2 safety" implemented a number of tasks performed on NPP V-2 over the course of the year. Pursuant to the decision of the NRA SR to modernize the NPP V-2 blocks, inspectors supervised project changes to the equipment, relating to nuclear safety. All works and tests were carried out in accordance with agreed strategies, deadlines, and in good quality. Tightness of the hermetic zone is greater than the required limit value.

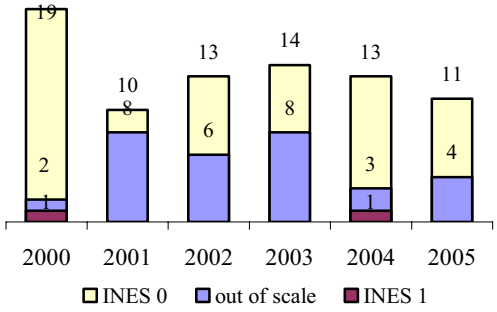
In 2005, there were 15 operation occurrences, including 11 under the INES 0 degree, on both NPP EBO V-2 blocks. Four occurrences were outside the INES classification scale. Fast automatic shutdowns were not recorded.

Based on the results of control activities and assessment of the safety indicators, together with inspection activities, NRA SR evaluated the operation of both NPP V-2 blocks as safe and reliable.

Trend in the count of events noticed on blocks of NPP Bohunice V-1



Trend in the count of events noticed on blocks of NPP Bohunice V-2



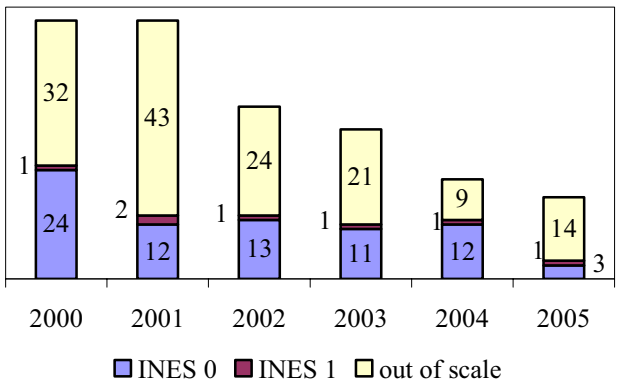
Source: NRA SR

NPP Mochovce (NPP EMO)

NPP Mochovce (NPP EMO) consists of two VVER 440 blocks with V213 reactors with increased safety. First block began operation in 1998, second block in April, 2000.

Number and type of occurrences in 2005 did not show any unusual technical malfunctions. In terms of nuclear safety, systems and devices functioned reliably the whole year. During 2005, there was one occurrence of insufficient in one of the hermetic areas, as a result of a failure to comply with effective limits and conditions of safe operation. While the nuclear safety was not put at risk, because of inappropriate personnel response and poor internal policies, assessment of the safety significance of the occurrence was increased from degree 0 (i.e. deviation) to degree 1 (i.e. malfunction) under the INES international scale. There were 18 occurrences in NPP Mochovce, including 3 under INES 0, and 1 under INES 1. No automatic shutdown of reactor occurred in either of the blocks.

Trend in the count of events noticed on blocks of NPP Mochovce



Source: NRA SR

♦ **Storage of spent nuclear fuel and radioactive waste**

Burnt nuclear fuel (BNF) is defined as a fuel irradiated in the reactor's active zone and permanently taken out of the zone. Basic principles of the strategy for handling **burnt nuclear waste** (BNF) and **radioactive waste** (RAW) are found in SR Government Resolutions No. 930/1992, No. 190/1994, and No. 5/2001.

Burnt nuclear waste is stored in special containers. Current storage capacity is 14 112 pcs of burnt nuclear waste. The programme of gradual translation of burnt nuclear fuel from the original T-12 containers to KZ-48 compacted containers continued in 2005.

♦ **Handling with radioactive waste**

In Slovakia, **radioactive waste** (RAW) is defined as unused material that due to its radionuclide content or contamination by radionuclides cannot be introduced into environment.

Handling of radioactive waste constitutes an integrated system that includes the collection, separation, storage, processing, treatment, manipulation, and discharge of radioactive waste.

Processing and treatment of radioactive waste includes activities leading to the increased safety and economic effectiveness in handling radioactive waste, as well activities that prepare radioactive waste to be discharged or stored.

Major part of these activities is concentrated in a nuclear facility of Technologies for processing and treatment of radioactive waste, operated by SE-VYZ. The mentioned nuclear facility includes two bituminisation lines, and the Bohunice processing centre of radioactive waste. Bituminisation lines with the capacity of 120 l/h are designed to bituminize concentrations from the VVER and NPP-1 nuclear power plants types into 200-liters barrels.

Transportation of radioactive waste makes it possible to connect individual elements within the radioactive waste handling system. Procedure of licensing radioactive waste transport consists of two steps. First step is to approve the type of transport device, while the second step is to approve radioactive waste transport inside this facility.

More than 200 pcs of fibre-concrete containers were transported to the national discharge site of radioactive waste. During the year 2005, major occurrences that would lead to accidents or malfunctions did not occur at the radioactive waste handling or transport facilities.

Discharge is the final step in the process of radioactive waste handling. Packaged forms of radioactive waste are permanently placed at the site of radioactive waste discharge.

National discharge site of radioactive waste Mochovce is designed to receive packaged forms of low to medium-active radioactive waste. This discharge site is of the surface type, designed to receive solid and solidified low to medium-radioactive waste from the operation of nuclear facilities and other institutions in the SR, that deal with activities producing radioactive waste. As of the end of 2005, there were 1 000 pcs of fibre-concrete containers for low to medium-active radioactive waste placed

here. Recent calculations show that the blocks of individual power plants will produce 2 500 t of burnt nuclear fuel and 3 700 t of radioactive waste over their projected lifetime. Current effective legislation does not allow these volumes to be placed at the National discharge site of radioactive waste. Today, there are plans to place the burnt nuclear fuel together with this type radioactive waste in the **underground discharge site.**

Noise and vibrations

Results from monitoring the noise load on public in selected Slovak cities in 2005, based on equivalent noise levels from road transport

Region - population	External noise level		Number of persons
Košice Idanská ul.	>55 dBA	1	
	>60 dBA	2	
	>65 dBA	3	**cca. 600**
	>70 dBA	4	
	>75 dBA	5	
Žilina	>55 dBA	1	
	>60 dBA	2	
	>65 dBA (69.2 dB)	3	**532**
	>70 dBA	4	
	>75 dBA	5	
Žilina bilingv. gymn.	>55 dBA	1	
	>60 dBA	2	
	>65 dBA (66.4 dB)	3	**600**
	>70 dBA	4	
	>75 dBA	5	
Čadca Horelica	**>55 dBA (56.5 dB)**	1	**8**
	>60 dBA	2	
	>65 dBA	3	
	>70 dBA	4	
	>75 dBA	5	

Source: SHI SR

A selected dangerous chemical substance and a selected dangerous chemical agents, use of which should be limited, can be introduced to market on condition they will not be harmful for human life and health and for the environment...

§ 28 par. 3 of the Act No. 163/2001 Coll. on Chemical Substances and Chemical Agents as subsequently amended

• CHEMICAL RISK FACTORS

Chemical substance

In the area of chemical substances management, the MoE SR ensured and coordinated activities in cooperation with the Ministry of Economy SR, Ministry of Health SR, Centre for chemical substances and products (Centrum), and Federation of Chemical and Pharmaceutical Industry of the SR. These activities relate to the implementation and transposition of the EU legislation into the SR legal system through adopting EU directives and ordinances on chemical substances and chemical products (chemicals) and biocides, in accordance with the SR legislation.

On the basis of a meeting of the SR authorities that control compliance with the National Council of the SR Act No.163/2001 Coll., the MoE SR defined, together with other responsible institutions, conditions to implement control system for introducing chemical substances to environmental market. Involved are also authorities that carry out inspection and implement the system of international inspection activities within the EU – the CLEEN system.

MoE SR is actively involved in the SAICM Programme (Strategic Access to International Chemicals Management) founded by the UNEP Executive Board in 2002. This process is carried out under the leadership of UNEP, in cooperation with the International Forum for Chemical Safety (IFCS) and the Inter-Organization Programme for the Sound Management of Chemicals (IOMC). SAICM creates chemical policies not only for the EU states, but also for other countries. Objective of the SAICM is to use chemical substances in appropriate way during their lifecycle. In the future, this objective will be carried out through the REACH directive and through a change to the Directive No 67/548/EEC on the approximation of laws, other legislation, and measures relating to classification,

packaging, and labelling of hazardous compounds. Next SAICM objective is to ensure that the chemicals be used and produced by methods that minimize significant adverse effects on human health and environment. REACH will meet this objective by making the information on alternative substances or technologies available to business persons within the authorisation process. "Rigorous control" of all used chemicals as well as their alternatives will be a critical activity that will ensure meeting the mentioned objective within the REACH system.

Xenobiotics in the food chain

Monitoring of xenobiotics collects information on the status and trends in pollution of individual components of environment, as well as information on health safety of local foods. Results from the monitoring, including the risk assessment, serve as a basis for adoption of preventive measures.

Testing for xenobiotics is carried out by testing organisations under the valid legislation, with the goal to prevent the flow of unacceptable foods to the consumer. Results from the tests serve as the basis for adopting immediate decisions.

- **Monitoring of xenobiotics in the food chain**

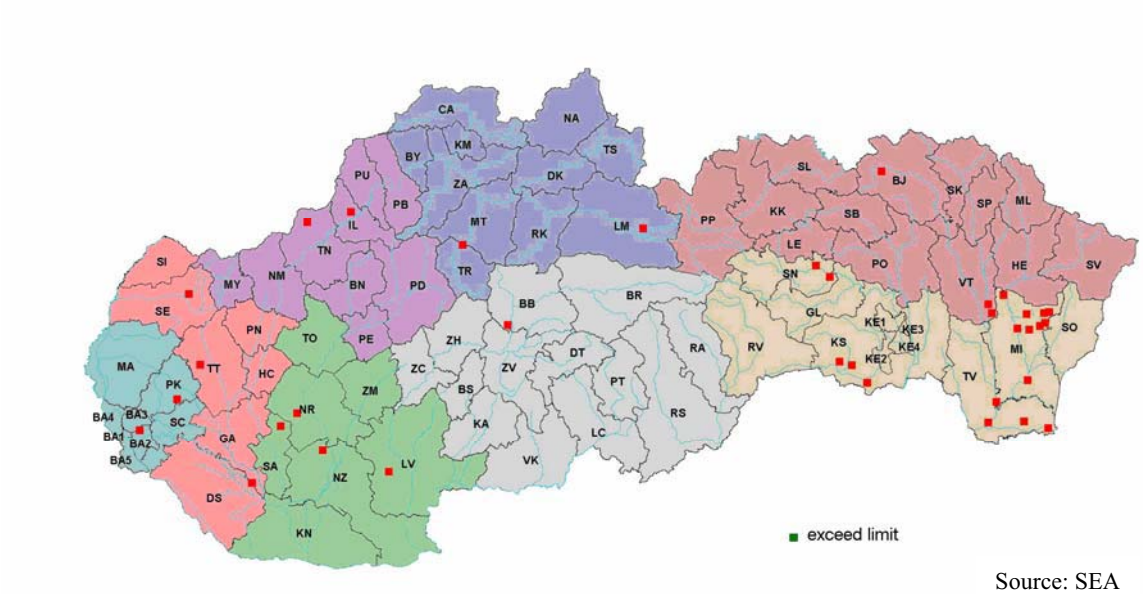
Partial monitoring system called: **Xenobiotic in foods and forage** is composed of three subsystems:

- Co-ordinated focus-specific monitoring (CFM) has been used since 1991.
- Consumption pool monitoring (CPM) has been used since 1993.
- Monitoring of game, wildlife, and fishes (MGF) has been implemented since 1995.

Partial monitoring system has been connected to the GEMS/FOOD EURO international monitoring system since 1994.

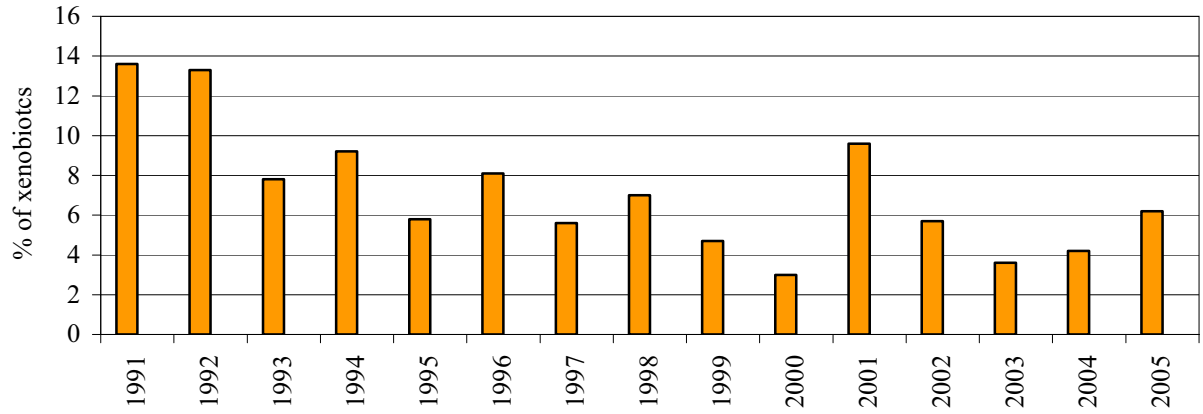
Coordinated focus-specific monitoring (CFM) has the objective to determine actual mutual relationship between the degree of contamination of agricultural land, irrigation water, feeding water, crop and animal production, within the primary agricultural production, and obtain information on the contamination of individual food chain components.

Monitored sites within the CPM with occurrence of the exceeding values of the xenobiotics in all monitored commodities in 2005



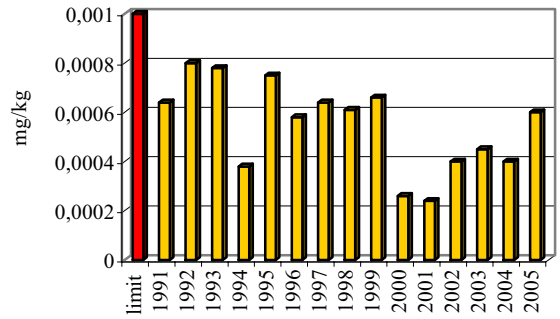
Source: SEA

Comparison of percentage changes of the limit-exceeding samples of all xenobiotics since 1991 in all commodities together (in percentage)

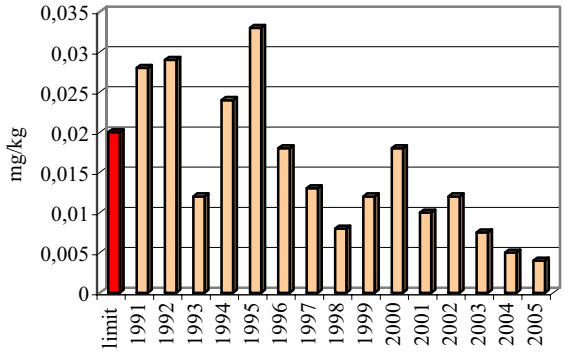


Source: FoRI SR

Comparison of the average findings of mercury in milk



Comparison of the average findings of lead in milk



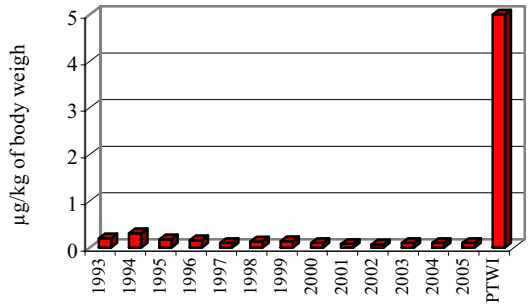
Source: FoRI SR

Objective of the **Consumption pool monitoring (CPM)** is to obtain data on contamination of foods in the consumer network in places with appr. 20 000 inhabitants and various forms of settlement. Samples are purchased from the commercial network twice a year (May, September) at 10 Slovak sites classified as heavily-contaminated, medium-contaminated, and relatively clean areas.

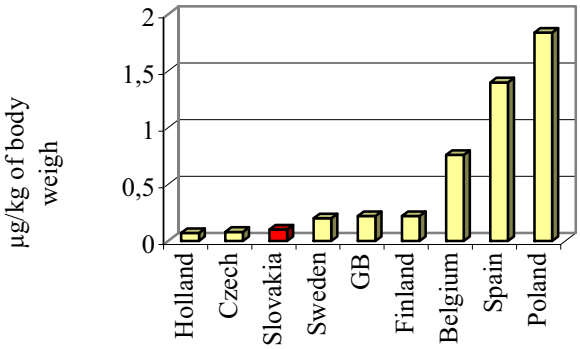
In 2005, 27 basic food items were sampled within the consumption pool (based on statistical consumption) together with drinking water samples from public water supplies.

MSK focuses primarily on determining the intake of individual xenobiotics into the human organism, in order to assess exposition of the population and compare it with the permitted tolerable weakly intake (PTWI) as well as acceptable daily intake (ADI).

Weekly income of mercury to human organism in individual years of CMS realization

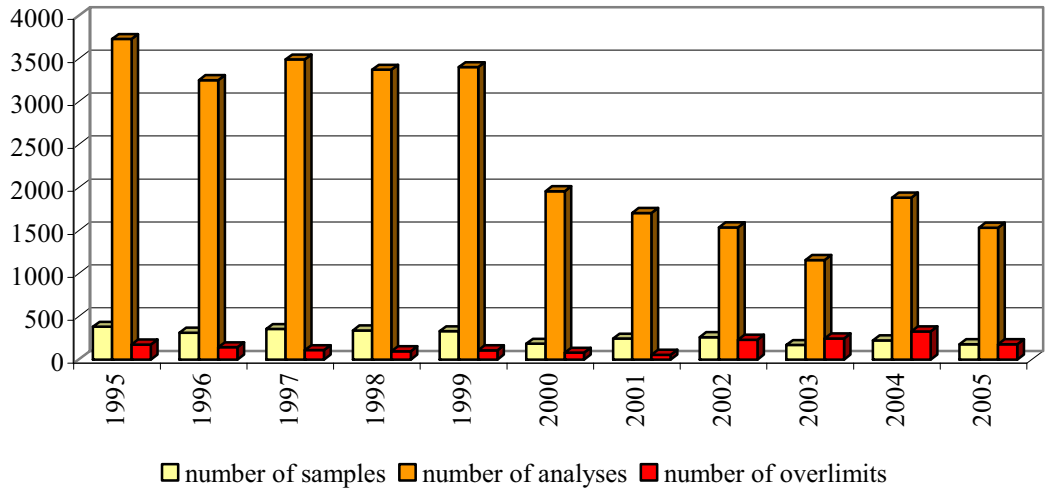


Comparison of weekly income of mercury to human body in SR with other countries



Source: FoRI SR

Comparison of number of analyses and over limits at hoof game 1995 - 2003



Source: SVFA SR

Compared with available international data, the SR may be considered among countries with **lowest values** of weekly intake of arsenic, cadmium, mercury, chrome, nickel, lead, and nitrates by the human organism.

Monitoring of game, wildlife, and fishes (Ministry of Health SR) in 2005 tested 178 samples of clove-hoofed game, hunting fish, fungi, lichens, small feather game, and water. Of 1 535 analyses, 179 exceeded the limit values. Samples of the PCB congeners from regular monitoring of fish from the Zemplínska Šírava and the surround rivers of this region were again detected in Eastern Slovakia. Control of dioxins in fishes was also included into the monitoring scheme of 2005. The found limit-exceeding values call for a need to continue with monitoring of these pollutants as well.

- **Control of xenobiotics in food chain**

31 210 samples (230 663 analyses from domestic production) come from monitoring of xenobiotic compounds in soil, water, forage, raw material, and food of the plant and animal origin in 2005. Of these, 1 226 did not meet the valid sanitary limits for the monitored parameters. The analysis included 2 016 soil samples, inputs to soil and plant material, 9 575 water samples, 1 217 forage samples, and 18 403 food samples. Further, tested were 4 447 imported samples, 115 samples of exceptional cases, and 18 030 samples under agrochemical soil testing. Water showed the greatest number of limit-exceeding events.

*While **handling waste** or otherwise treating waste everyone shall be obliged to protect human health and the environment.*

§ 18 par. 1 of the Act No. 223/2001 Coll. on Waste, including several changed and subsequently amended other laws

• WASTE AND WASTE MANAGEMENT

Initial situation

The year 2005 was a breakthrough year for the area of waste management for various reasons. It was the last implementation year of the SR **Programme of Waste Management by 2005**, and at the same time the initial year for the preparation of the new SR Programme of **Waste Management for the years 2006-2010.**

Funds for the development of the waste management infrastructure in 2005 were available from 3 sources: Environment Fund, Recycling Fund, and from the EU Structural Funds operated by the Basic Infrastructure Programme. For the first time, projects from the structural funds could be submitted all year long.

One of the **major legal changes** include the Act No.733/2004 Coll. that amends the Act No. 223/2001 Coll. on waste and amendments to subsequent legislation as amended. The SR used this Act to implement the European Parliament and Council Regulation 2002/95/EC **on limited use of certain hazardous compounds in electrical and electronic devices**, and the European Parliament and Council Regulation 2002/96/EC **on waste from electrical and electronic devices**.

A major change was introduced in the area of **old vehicles treatment**. The possibility to keep the old vehicle through a sworn statement ceased to be effective as from January 1, 2006.

The new regulation of Act No. 223/2001 Coll. on waste and amendment to subsequent legislation as amended came into effect on January 1, 2005. The new law **spells out the obligation to stabilize certain waste categories before their disposal on landfills**.

Balancing of waste generation

Regional Information System on Waste (RISW) operated by the SEA assessed the waste generated in 2005, with the exception of the municipal waste, which is assessed by the SO SR.

Waste treatment activities

Code	Treatment activities
R1	Used mainly as fuel or to extract energy through different approach
R2	Solvent reclamation/regeneration
R3	Recycling or reclamation of organic substances which are not used as solvents (including composting and other biological transformation processes)
R4	Recycling or reclamation of metals and metal compounds
R5	Recycling or reclamation of other inorganic material
R6	Regeneration of acids and bases
R7	Recovery of components used for pollution abatement
R8	Recovery of components from catalysers
R9	Oil re-refining or other re-uses of soil
R10	Treatment of soil to benefit the agricultural production or to improve environment
R11	Use of waste obtained from the activities R1 to R10
R12	Treatment of waste generated by any of the R1 to R11 activities
R13	Storing of waste before using any of the R1 to R12 activities (besides temporary storage prior to collection at the place of waste generation)

Waste disposal activities

Code	Disposal activity
D1	Underground or surface waste disposal. (e.g. landfill)
D2	Treatment by soil processes (e.g. biodegradation of liquid or sludge waste in soil, etc.)
D3	Depth injection (e.g. injection of extractable waste into wells, salt mines or natural disposal sites, etc.)
D4	Disposal into surface tanks (e.g. disposal of liquid or sludge waste into pits, ponds, or lagoons, etc.)
D5	Specially engineered landfills (e.g. placement into separate cells with treated wall surfaces that are covered and insulated one from another and from environment, etc.)
D6	Discharging and dumping into water recipients, besides seas and oceans
D7	Discharging and dumping into seas and oceans, including disposal to ocean bottom
D8	Biological treatment non-specified in this annex that generates compounds and mixtures eliminated by any of the D1 to D12 activities
D9	Physical-chemical treatment non-specified in this annex that generates compounds and mixtures eliminated by any of the D1 to D12 activities. (e.g. vaporizing, drying, calcinations, e.g.)
D10	Incineration on land
D11	Incineration at sea
D12	Permanent storage (e.g. placing of containers in mines, etc.)
D13	Mixing or blending prior to any of the D1 to D12 activities
D14	Placing into other packaging prior to any of the D1 to D12 activities
D15	Storage before implementing any of the D1 to D14 activities (besides temporary storage prior to collection at the place of waste generation)

Since 2003, **waste generation balance** has been distributed over 2 tables. First table shows the volumes of generated waste on the basis of notifications from waste producers, while the second table shows just those waste volumes that are located on the market, i.e. the producers had to submit waste for recovery or disposal to the authorities dealing with waste handling, pursuant to waste law.

Waste volumes located on the market represent the initial statistical basis for monitoring the waste management trend.

Waste generation (t)

Waste category	Amount (t)
Hazardous waste	694 471
Other waste	16 113 196
Municipal waste	1 558 263
Total	**18 365 930**

Source: SEA, SO SR

Generation of waste located on the market (t)

Waste category	Amount (t)
Hazardous waste	561 247
Other waste	8 809 928
Municipal waste	1 558 263
Total	**10 929 438**

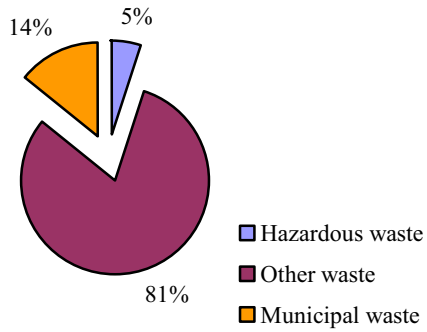
Source: SEA, SO SR

Compared to 2004, **increase in waste located on the market was more than 16 %**. The following chart shows the percentage share of individual waste categories. Other waste (O) shows 81 % share, which is traditionally the greatest share on the waste generation market. Significant increase existed in hazardous waste generation (H) by 30 %, compared to the previous year.

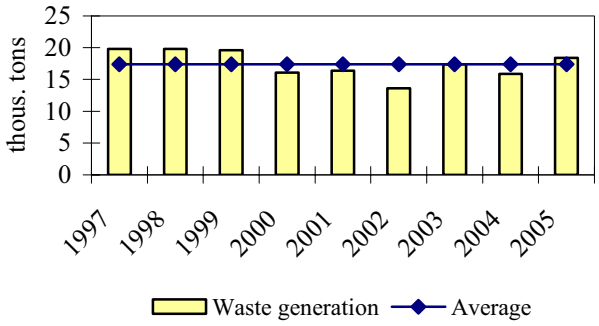
Municipal waste includes both waste categories (O and H). However, it is necessary to separate the category of municipal waste considering the unique character of its regime, typical of municipal waste.

Long-term trend in waste generation points to the fact that total waste generation has remained relatively uniform over the recent years.

Percentage of waste categories



Waste generation in SR from 1997 to 2005



Source: SEA

In the area of waste generation **by economic activities** classification, **manufacturing industry** has been the **dominating** component over the recent years, **with 64 %** share on total waste

generation. Sector of construction follows with 10 %, commercial services with 9 %, agriculture with 7 %, and waste water treatment and waste disposal with 4 %.

Waste generation by particular economic sectors in 2005 (t)

Economic sector	Total	Hazardous waste	Other waste
Agriculture	661 068.24	15 174.84	645 893.40
Fishery	842.91	35.25	807.66
Industry total	6 048 208.08	304 265.55	5 743 942.52
Building industry	950 926.19	8 635.21	942 290.98
Trade	854 462.84	58 228.04	796 234.80
Hotels and restaurants	1 743.33	61.23	1 682.10
Transport and communications	151 461.17	94 654.22	56 806.95
Banking and insurance sector	99.38	55.79	43.60
Activities in domain of real estate	84 804.66	10 734.23	74 070.43
Public administration and defence	17 668.69	2 375.31	15 293.38
Education	903.96	134.65	769.30
Health service	68 544.33	2 595.54	65 948.80
Waste water treatment and waste disposal	361 549.05	62 570.86	298 978.19
Unknown	168 892.12	1 726.11	167 166.00

Source: SEA

Compared to 2004, major changes exist in industrial manufacturing, with waste generation decreasing approximately by 539 000 tons, and commercial activities generating 518 000 tons of waste more.

Waste treatment

The MoE SR Resolution No.509/2002 Coll., and the MoE SR Resolution No. 128/2004 Coll. which amend the MoE SR Resolution No. 283/2001 Coll. on execution of a number of provisions of the waste law, introduced into the system the codes of handling **Z -waste collection through temporary waste disposal prior to further handling at the generation site**, **O - handing over of waste to another subject for its further treatment or recovery, and DO - handing over of waste for domestic use**. Consequently, compared to 2004, waste handling and disposal activities **dropped by as much as 879 000 tons**. On the other hand, there was an 80 % increase in waste handling and its handing over for household use.

Handling with waste by means DO, O and Z codes (t)

Disposal code	Activity	Total	Hazardous	Others
DO	Handing over of waste for domestic use	178 613.06	68.33	178 544.72
O	Handing over to another subject	783 195.80	33 423.30	749 772.50
Z	Storage of waste	107 640.24	7 222.00	100 418.25

Source: SEA

Waste recovery

There were **4 783 664 tons of waste recovered** in the SR in 2005. This represents **44 % of total volume of waste** located on the market. Compared to 2004, this represents **17 % increase** in waste recovery. The R4 activity - recycling or reclamation of metals and metal compounds, dominates among the methods of waste recovery, with 31 %. There are also R10 activities – treatment of soil to obtain benefits for agricultural activities or to improve environment, with 15 %, R3 activities – recycling or reclamation of organic substances not used as solvents (including composting and other biological transformation processes), with 12 %, R5 activities - recycling or reclamation of other inorganic material, with 7 %, and R1 activities - using as fuel or obtaining energy through other ways, with 6 %, that significantly influence waste recovery.

Waste recovery following codes R1 – R13 in year 2005 (t)

Code of recovery	Total	Hazardous waste	Other waste
R01	304 003.27	14 791.51	289 211.76
R02	5 521.11	4 411.18	1 109.93
R03	579 146.72	13 183.59	565 963.13
R04	1 459 172.39	13 124.18	1 446 048.21
R05	357 898.27	3 383.28	354 514.98
R06	4 959.75	4 919.45	40.30
R07	1 128.81	224.71	904.10
R08	2 168.00	2 142.60	25.40
R09	13 475.21	13 420.32	54.89
R10	712 512.72	565.48	711 947.23
R11	416 465.18	74 944.26	341 520.92
R12	12 127.98	1 770.73	10 357.25
R13	915 084.54	10 858.91	904 225.63
Total	**4 783 663.94**	**157 740.21**	**4 625 923.73**

Source: SEA

In 2005, **the Recycling Fund** contributed with 20 million SKK more to business projects of waste collection, recovery, and treatment than in 2004, representing more than **484 million SKK in total**. The Fund contributed for separated waste collection in towns and villages in 2005, by almost 34 million SKK. Municipalities receive a contribution for separated documented recovered waste. This contribution in 2005 remained at the same level of 1 500 to 1 800 SKK per ton.

Contributions received from the Recycling Fund (SKK)

Sector/Year	2002	2003	2004	2005
Used batteries and accumulators	0	14 665 664	6 123 789	27 762 392
Waste oils	0	25 978 911	13 513 450	31 838 929
Used tyres	0	55 526 823	31 938 861	52 227 842
Multi-layer combined material	0	11 200 000	6 011 426	15 788 362
Electrical and electronic devices	0	108 444 952	31 809 571	43 873 057
Plastics	0	45 331 744	97 465 327	85 257 226

Mercury-containing sources of light	0	3 376 397	1 747 720	1 788 973
Paper	0	66 861 855	66 541 864	63 043 210
Glass	0	6 662 395	26 397 285	36 443 376
Vehicles	0	20 708 446	73 828 884	50 661 866
Metal packaging	0	0	12 385 467	6 909 123
General sector	0	16 673 117	69 584 229	34 684 182
Proposals of municipalities for contribution	0	5 031 880	27 467 030	33 956 530
Total	**0**	**380 462 184**	**464 814 903**	**484 235 068**

Source: RF

Environmental fund contributed with the sum of 75 400 000 SKK to the development of waste management in 2005, 82 projects out of 156 applications received the funding.

The EU Structural Funds contributed with significant funding to the development of the waste management infrastructure in 2005, under the Basic Infrastructure Operation Programme. Total approved sum exceeds 783 000 000 SKK, while 5 508 000 SKK was approved for development of waste separation activities.

Waste disposal

Pursuant to the waste management hierarchy and concepts on the EC level, waste disposal is considered to be the last and least acceptable way of waste handling.

Waste disposal following codes D1 – D15 in year 2005 (t)

Code of disposal	Total	Hazardous waste	Other waste
D01	2 888 359.46	130 586.60	2 757 772.85
D02	67 230.63	47 793.25	19 437.38
D05	1 869.02	299.57	1 569.45
D08	40 607.39	15 096.45	25 510.93
D09	91 196.44	67 651.09	23 545.35
D10	102 936.89	85 642.79	17 294.10
D11	7.23	0.02	7.21
D12	0.25	0.25	0.0
D13	4 623.56	176.43	4 447.13
D14	1 619.12	1 618.94	0.18
D15	38 707.28	13 927.53	24 779.75

Source: SEA

D-1 activities – underground or surface waste disposal, i.e. landfilling, **has the greatest share** on this situation, **with 89 % share** on all totally eliminated waste. Of total volume of waste located on the market, 26 % of waste was disposed of through the D1 method. It is important to add that compared to the previous year, volumes of landfill waste dropped by 1 700 000 tons, which is a reduction by 37 %.

Number of landfills towards 31.12.2005

Region	Number			
	H	O	I	Total
Bratislava	2	6	2	10
Trnava	1	18	3	22
Trenčin	1	15	3	19
Nitra	2	20	2	24
Žilina	1	16	3	20
Banska Bystrica	1	21	2	24
Prešov	1	22	1	24
Košice	3	12	3	18
Total	**12**	**130**	**19**	**161**

Source: SEA

H – landfill for hazardous waste
O – landfill for non-hazardous waste
I – landfill for inert waste

Of all waste disposal mechanisms, the **D10 method** – Incineration on land, contributes to waste disposal **by 3 %,** and **the D9 method** – Physical-chemical treatment **with 3 %** as well. Number of partial or total waste incineration facilities was 40, which is less than in 2004 by 5 facilities.

For a number of years, incineration capacities for the municipal sector include only facilities in Bratislava and Košice. Both facilities use the heat from waste incineration.

Number of waste incineration and facilities for waste incineration in SR towards 31.12.2005

Region	MW	IW	HoW	CIW	Total
Bratislava	1	4	1	1	7
Nitra	0	1	4	0	5
Trenčin	0	2	5	2	9
Trnava	0		2	0	2
Banska Bystrica	0	2	2	0	4
Žilina	0	3	2	1	6
Košice	1	1	0	0	2
Prešov	0	2	2	1	5
Total	**2**	**15**	**18**	**5**	**40**

Source: SEA

MW – municipal waste
IW – industrial waste
HoW – hospital waste
CIW – facilities for waste co-incineration

Waste from electrical and electronic devices

Act No. 733/2004 Coll. implemented the following directives into the SR legal code: Directive No. 2002/96/EC on waste from electrical and electronic devices, and Directive No. 2002/95/EC on limited use of certain hazardous compounds in electrical and electronic devices. This legislation introduced the system of handling electrical devices and electric waste in the SR. Producers of these devices are bound by this legislation to comply with collection, recovery or recycling of electrical waste for 10 categories.

Processing of waste from electrical and electronic devices may be carried out only by those subjects that are authorised by the MoE SR. There are 12 subjects in Slovakia that are authorised to process waste from electrical and electronic devices.

Summary reports by producers of electrical devices for the year 2005

Category under Annex 3 of the waste law	Introduced to market (kg)	Collected (kg)	Processed (kg)	Recovered (kg)	Recycled (kg)
1. Big domestic appliances	24 043 679.75	1 862 639.33	1 815 167.31	1 674 978.79	1 646 427.33
2. Small domestic appliances	3 074 754.98	191 225.63	175 236.63	132 789.10	120 621.62
3. IT and telecommunication devices	4 285 317.16	283 949.01	275 224.81	192 574.50	153 164.69
4. Consumer electronic devices	9 551 813.65	1 100 853.27	1 083 008.93	678 312.98	302 664.10
5. Sources of light	2 742 566.29	25 896.33	25 779.94	10 220.29	8 943.17
5a.Gass lamps	684 905.40	68 438.10	64 249.10	55 519.49	55 516.49
Total (5+5a)	3 427 471.69	94 334.43	90 029.04	65 739.78	64 459.66
6. Electrical and electronic instruments	2 639 798.06	24 088.46	24 156.38	15 358.78	13 731.10
7. Toys, devices designated for sport and recreational use	225 937.86	2 470.43	2 470.43	2 021.40	1 867.58
8. Medical devices	236 230.27	0.00	0.00	0.00	0.00
9. Machines for monitoring and testing	38 958.47	280.00	280.00	250.00	250.00
10. Vending machines	148 518.00	0.00	0.00	0.00	0.00

Source: SEA

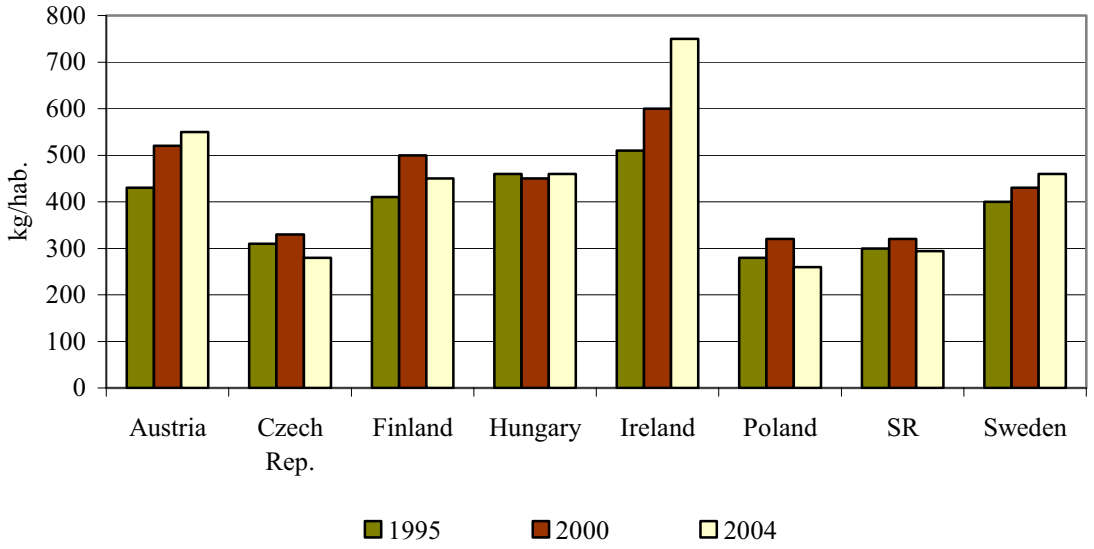
Municipal waste

According to data from the SO SR, there were **1 558 263 tons of total municipal waste** generated in Slovakia in 2005. This volume represents **289 kg of municipal waste per capita.** Compared to 2004, this is a reduction by 5 kg per capita. Of total amount of municipal waste, **major part (as much as 92 %) is disposed of through waste disposal**, while municipal **waste recovery is only 3 %**. Long-term waste **disposal on landfills** (79 %) is the **most frequent method** of municipal waste handling.

In terms of **municipal waste composition**, mixed municipal waste (72 %) together with bulky waste (9 %) constitutes the major component of municipal waste. Biologically degradable waste from gardens and parks (i.e. green waste) was 4 %.

According to the SO SR, **volume of separated municipal waste per capita is 16 kg**, which means that the level of municipal waste separation is increasing; however, still not sufficient. Volume of **recovered municipal waste per capita is 7 kg**. An effective system that takes into consideration the quality of separated waste components and the subsequent connection to recovery capacities will soon have to be created. The European Union financial structures may provide a significant assistance in the area of separated waste collection, which, together with the Recycling and Environment Fund will represent still greater opportunity for municipalities to obtain funding to introduce the separated collection duty as from January 1, 2010.

Municipal waste generation – international comparison (kg/habitant)



Source: OECD

Municipal waste generation and disposal (t)

Region	Total	D01	D02	D05	D09	D10	D12	D13	D15	DO	O
Bratislava	**261 037.93**	102 478.01	1 202.37		271.20	124 522.10					21 742.15
Trnava	**221 066.59**	207 572.61				2.00					8 484.22
Trenčin	**165 423.38**	152 531.13	2.00	0.10	2.89		250.00	5.98	30.27		5 266.69
Nitra	**218 168.64**	205 988.44	62.72		0.03	27.10			254.80	0.16	5 511.15
Žilina	**198 101.51**	188 254.74									6 559.09
Banska Bystrica	**169 272.72**	153 111.87									12 070.06
Prešov	**162 275.56**	135 643.43	100.25	296.52		254.14			13 006.56		8 023.72
Košice	**162 916.61**	80 989.64	7.16	27.52		55 938.24		2 817.44	2 194.46		17 684.85

Region	R01	R02	R03	R04	R05	R06	R07	R09	R10	R11	R12	R13	Z
Bratislava	12.80		8 465.03	31.09	841.31					0.80		1 471.07	
Trnava	46.80		1 877.19	107.31	685.58		8.17					195.99	2 086.72
Trenčin	360.66		2 019.46	432.42	1 497.73			0.83	61.70	246.79		2 627.53	87.20
Nitra	40.70	0.16	3 037.31	154.17	1 099.80			0.50	264.30	373.12	8.21	99.10	1 246.87
Žilina	3.63		1 427.53	265.29	1 149.60			7.50				138.81	295.32
Banska Bystrica	1 625.28	0.65	961.65	51.99	673.38	0.12		0.18			1.02	31.65	744.87
Prešov	11.80		2 613.10	236.78	544.60	0.30	0.30		65.40	1.00	3.53	1 210.91	263.22
Košice	4.25		442.85	86.05	466.86	0.48	1.50	1.37	2.70	3.99	400.11	1 681.00	166.14

Source: SO SR

Packaging and waste from packaging

In 2005, the adopted Directive 2005/20/EC which amends Directive 94/62/EC on packaging and waste from packaging, outlined out the possibility of **transitional period until 2012** for the SR, Cyprus, Czech Republic, Estonia, Hungary, Lithuania, and Slovenia. In case of Malta, it is by 2013, while for Poland and Latvia it is by 2015.

On 1. June, 2005, the SR Government Order No. 220/2005 Coll. became effective. The Resolution defines obligatory limits for packaging waste recovery and for the scope of its recycling in relation to total weight of packaging waste. This also includes the MoE SR Regulation No. 210/2005 Coll. on execution of a number of the packaging law provisions, which supersedes the MoE SR Regulation No. 5/2003 Coll. All this was the result of the amended Act No. 529/2002 Coll. on packaging.

Obligatory limits for packaging waste recovery in relation to total weight of packaging waste

Packaging material (%)	2005	2007	2009	2011	2012
Paper	36	45	61	65	68
Glass	40	43	46	50	60
Plastics	28	38	40	45	48
Metals	20	25	35	50	55
Wood	0	0	0	25	35
Total	32.3	39.4	49	56	60

Source: MoE SR

Obligatory limits for the packaging waste recycling in relation to total weight of packaging waste

Packaging material (%)	2005	2007	2009	2011	2012
Paper	30	40	56	58	60
Glass	40	43	46	50	60
Plastics	20	30	35	40	45
Metals	20	25	35	50	55
Wood	0	0	0	15	25
Total	28	35.6	46	50	55

Source: MoE SR

Volumes of packaging waste generated in the SR and recovered or incinerated in waste incinerators with energy recovery technologies (t)

Material		Packaging waste	Recovered waste or waste incinerated with energy recovery						
			Material recycling	Other forms of recycling	Recycling total	Energy recovery	Other forms of recovery	Waste incineration with energy recovery	Waste and energy recovery and waste incineration in total
Glass		100 000	26 500		26 500				26 500
Plastics		50 000	8 000		8 000			8 286	16 286
Paper/cardboard		200 000	100 000		100 000			12 521	112 521
Metals	**Aluminium**								
	Steel								
	Total	10 800	1 723		1 723				1 723
Wood		9 587	2 900		2 900	1 100			4 000
Other									
Total		381 387	139 123	0	139 123	1 100	0	20 807	161 030

Source: MoE SR

Trans-boundary movement – import, export and transit of waste

For its decisions to transport waste over national borders in 2005, the MoE SR applied the EEC Council Regulation No. 259/1993 on the supervision and control of shipments of waste within, into and out of the European Community (Council Directive 259/93) taking into account the Treaty of Accession of the SR to the EU, and the relevant national legislation. In accordance with the Treaty of Accession of the SR to the EU, the MoE SR made decisions in 2005 also to import waste classified under the Green Waste Register (Annex II of Government Order No. 295/93) for its recovery.

Over the course of 2005, the MoE SR issued **129 decisions on trans-boundary transport of waste**, including **105 import licenses, 18 export licenses, 4 licenses for transit transport of waste**, and two decisions objecting the import of waste. Objections were raised against the import of agro-chemical waste including hazardous compounds from Poland that was to be disposed of in the territory of the SR. The other case involved the import of municipal waste from Austria to the SR, to be recovered through the R3 activities at a facility that did not have a valid license for the R3 waste recovery.

Summary of the number of effective licenses for trans-boundary transport of waste, issued in 2005

Issued in year	Import	Export	Transit	Total
2005	46	5	2	**53**
2005 -2006	59	13	2	**74**
Total	105	18	4	**127**

Source: SEA

Number of issued licenses for waste import in 2005 was 83 % of total number of issued licenses for trans-boundary transport of waste. Increase in the number of decisions to import waste was the result of the fact that also the waste under the Green Waste Register had be licensed by the MoE SR. Issued licenses in 2005 for trans-boundary waste transport, i.e. import, export, and transit of waste, allowed **1 077 472 tons of waste to be transported**.

- **Waste import**

Licensed import of 1 034 140 tons of waste related to the waste under the Green Waste Register, Yellow Waste Register (Annex III of Government Order No. 259/93) and to the waste impossible to classify under any annex of the Council Regulation 259/93 (the last amounting to 54 000 t).

Issued licenses to import waste in 2005 allowed to import waste from 13 countries, including 7 EU countries (818 960 t of waste) and 6 non-EU countries (215 180 t of waste).

- **Waste export**

Licenses to export waste in 2005 involved 14 categories of waste under the Green Waste Register (6 categories) and the Yellow Waste Register (8 categories). Waste export was licensed for

Belgium, Czech Republic, Poland (40 %), Austria, German Federal Republic, Ukraine (45 %), and Great Britain, **totalling 33 540 t**, which includes 18 440 t to the EU countries.

Total permitted volumes of waste by individual countries

Country/ISO code	Import to SR (t)	Export from SR (t)
Belgium	-	3 300
Belorussia	130	-
Czech republic	188 000	300
Netherlands	1 100	-
Kazakhstan	20 000	-
Hungary	334 200	-
Poland	149 000	13 300
Austria	113 670	18
Romania	60 000	-
Russia	80 000	-
Germany	32 740	1 482
Switzerland	4 000	-
Ukraine	51 050	15 100
Great Britain	250	40
Total	**1 034 140**	**33 540**

Source: SEA

In terms of total waste licensed for export, (1 034 140 t) in 2005, import from Hungary amounted to one third of the licensed import from the other twelve countries.

- **Waste transit**

MoE SR decisions for transit transport issued in 2005 made it possible to transport 3 waste categories, including 2 waste categories classified under the Green Waste Register, and one waste category classified under the Yellow Waste Register.

Decisions of the MoE SR for transit of waste in 2005 allowed transport through the SR territory to the Federal Republic of Germany (792 t), Hungary (6 500 t), and Romania (2 500 t). Waste – AA 170 – lead accumulators, whole or shredded – from Hungary was routed to the Czech Republic and the Federal Republic of Germany. Purpose of this transport was to recover waste at the facilities located in the destination countries. Waste export from the Federal Republic of Germany was licensed for the GO 050 category – disposable photo cameras without batteries, to Romania, through the Czech Republic, Slovak Republic, and Hungary. Transit of iron or steel waste (GA 430) was possible from Romania to Poland.

***Fire** is every undesirable burning, by which damages of property or environment emerge, or which results in death or injured person or killed animal; fire is also undesirable burning, which endangers lives or health of people, animals, property or environment.*

§ 2 par. 1 letter a/ of the Act No. 314/2001 Coll. on Prevention from Fires

• NATURAL AND TECHNOLOGICAL HAZARDS

Accidental deterioration of water quality

According to the SEI statistics on emergency deterioration or a threat to water quality (WQEDA) in 2005, there was a reduction in the number of these occurrences, compared to the previous year - especially in case of the surface water. However, this number is still significant.

Special declination or quality menace of water of the SR in the years 1993 - 2005

Year	WQEDA recorded by SEI	Special deterioration of water					
		Surface			Ground		
		Total number	Watercourses and basins	Water courses	Total number	Pollution	Endanger-ment
1993	142	95	3	12	47	10	37
1994	121	82	5	7	39	10	29
1995	129	73	5	11	56	8	48
1996	117	71	1	10	46	7	39
1997	109	63	0	6	46	14	32
1998	117	66	2	1	51	10	41
1999	98	61	2	9	37	3	34
2000	82	55	2	9	27	3	24
2001	71	46	1	4	25	1	24
2002	127	87	1	6	40	5	35
2003	176	134	2	3	42	0	42
2004	137	89	1	10	48	11	37
2005	119	66	2	5	53	2	51

Source: SEI

In terms of water-threatening compounds (WTC), exceptional deterioration of water quality in a long run has been caused mainly by crude oil compounds - as was also the case in 2005. Wastewater has smaller impact on WQEDA, together with livestock excrements, insoluble substances, alkali, pesticides, other toxic substances, most of all those WTC in which it was impossible to determine the category.

Progress in number of WQEDA according to the sort of WTC in the years 1993 – 2005

Sorts of water deteriorative substances:	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
Oil substances	63	76	69	50	61	54	33	40	64	59	70	63
Alkalis	3	3	5	10	3	5	2	2	5	3	1	0
Pesticides	1	0	1	1	3	1	0	0	1	0	3	0
Excrements of farm animals	9	11	14	8	3	7	5	4	9	21	15	14
Silage fluids	0	0	1	1	0	2	4	0	2	1	1	0
Industrial fertilisers	0	1	0	0	0	0	0	0	0	1	0	0
Other toxic substances	5	5	1	5	0	6	12	5	3	3	0	4
Insoluble substances	4	6	4	8	7	1	5	2	6	11	3	4
Waste water	6	1	6	11	17	6	10	10	17	35	20	10
Other substances	13	10	9	6	6	4	2	1	3	7	10	8
Water detrimental substances impossible to determine	17	16	7	9	17	12	9	7	17	35	14	10

Source: SEI

Major causes of accidental deterioration of water quality and 2005 included traffic and transportation (45 cases), and human factor (21 cases).

Scheme about WQEDA arose out of area of SR, caused by foreign organizations or unknown originator in the years 1993 – 2005

Year	WQEDA caused or originated (number)					
	Outside the SR territory		Foreign organizations		Unknown originator	
	Number	%	Number	%	Number	%
1993	7	4.9	7	4.9	44	31.0
1994	2	1.7	2	1.7	44	36.4
1995	5	3.9	3	2.3	28	21.7
1996	3	2.6	3	2.6	23	19.7
1997	1	0.5	6	5.5	20	18.4
1998	0	0	7	6	28	23.9
1999	3	3.1	3	3.1	27	27.6
2000	5	6.1	1	1.2	28	34.1
2001	0	0	3	4.2	16	22.5
2002	1	0.7	4	3.1	35	27.5
2003	2	1.1	8	4.5	52	29.5
2004	7	5.1	8	5.8	36	26.3
2005	3	2.5	15	12.6	33	27.7

Source: SEI

Summary of the WQEDA causes recorded by the SEI in 1993 – 2005

	Events by causes of their origin:	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
1.	Breaching the technological and work discipline	25	34	20	35	29	20	14	15	17	43	16	21
2.	Poor state of the device caused by:												
	2A lack of maintenance and spare parts	14	12	11	10	10	6	7	4	8	14	9	6
	2B inappropriate technical architecture	12	9	11	4	4	11	5	9	11	12	8	13
	2C inadequate capacity of storage unit and emergency tanks	0	3	3	0	1	2	1	1	6	3	4	5
3.	Emergency event : 3A fire	2	3	2	0	0	0	0	0	1	1	3	2
	3B explosion					1	0	1	1	0	3	0	0
4	Impact of the climate: 4A climate factors	6	4	15	4	1	5	3	0	5	12	5	1
	4B oxygen deficit					0	0	1	0	0	0		0
5.	Traffic and transportation : 5A traffic	16	14	20	28	24	14	11	9	28	28	19	40
	5B transportation					9	6	1	1	6	2	2	5

6.	**Event outside the territory of the Slovak Republic**	2	5	3	1	0	3	5	0	0	2	7	3
7.	**Other**	13	29	14	13	15	15	14	18	21	19	37	7
8.	**Unknown**	32	16	18	13	23	16	19	0	24	37	27	16

Source: SEI

Scheme of the most significant WQEDA caused in the year 2005

Year	Date	Place of occurrence, object	Cause of event	Aftermath of event
2005	23. 8.	Hriňová, Slatina stream, former ZŤS site	Cyanide, cadmium, zinc, nickel, chromium, copper - released at destruction works - galvanizing	Approximately 1 200 kg of fishes dead along 13.1 km
	7.8.	WWTP, OKTAN Kežmarok, Poprad stream	Release of contaminated wastewater at increased rainfall activity	Contamination of the border stream by the oil compounds

Source: SEI

Accidental deterioration of air quality

In 2005, Air Protection Inspectorate Division, recorded five events that caused deterioration in air quality (ADA). The following table shows a trend in the number of Air Quality Endangerment and Deterioration Accidents recorded by the SEI.

The following table shows the most critical ADA cases.

Summary of the major events (accidents) leading to exceptional deterioration or threatening of air quality in 2005

Year	Date	Place of occurrence, object	Cause of accident	Aftermath of accident
2005	22. 5. – 1.6.	DZ Koksovňa, U.S.Steel Košice, inc., VKB 3	Malfunction of the exit dust conveyor number 776 at dry dust removal from gases from the coke extrusion at VKB 3	PM release of 39.22 tons
	18.6.	DZ Energetika, U.S. Steel Košice, inc.	Outage in burning kiln gas caused by extinguishing of flame and subsequent release of non-burnt kiln gas	Release of non-burnt kiln gas of approximately 10 000 m^3

Source: SEI

Trends in number of ADA in years 1993 - 2005

Year	Recorded events	Accidental deterioration or endangerment of air quality (ADA)	
		Deterioration	Endangerment
1994	1	1	-
1995	9	8	1
1996	5	5	-
1997	7	7	-
1998	5	5	-
1999	3	3	-
2000	4	3	1
2001	1	1	-
2002	4	4	-
2003	3	3	-
2004	1	1	-
2005	5	5	-

Source: SEI

Trends in number of ADA by air contaminant types in years 1995 to 2005

Type of pollutant	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
SO_2	2	2	1	1	2	1	1	-	1	-
NO_x	2	2	1	1	1	1	1	-	1	-
SPM	2	1	1	1	2	1	1	2	1	1
CO	2	1	1	1	1	1	-	1	1	-
C_{org}	2	1	1	1	1	-	-	-	1	-
H_2S	-	1	-	-	-	-	-	-	-	-
NH_3	-	-	-	-	-	-	1	-	-	-
Vinylchloride	-	-	1	-	-	-	-	-	-	-
chlorine	-	-	-	-	1	-	-	-	-	-
HCl	-	-	-	-	-	-	-	-	-	1
CO_2	-	-	-	-	-	-	-	-	-	1

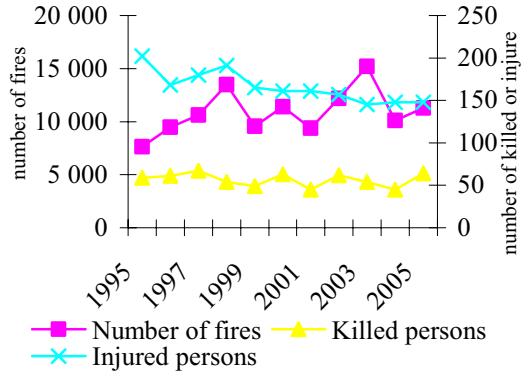
Source: SEI

Fire risk

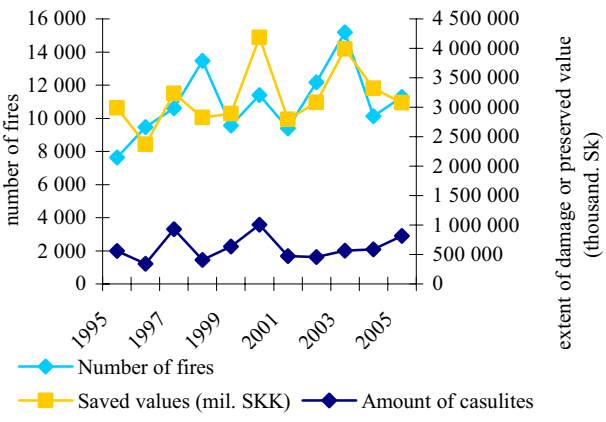
11 294 fires causing 64 casualties and 166 injured were documented in the SR in **2005**. Direct material damage reached 813 494 900 SKK, while the volume of preserved values was calculated at 3 074 208 000 SKK.

In terms of damage caused by fires in individual sectors of economic activities, **most fires were documented** in the area of **agriculture**, just like in the previous years. There were 2 481 fires in agriculture causing direct material damage of about 39.1 million SKK, 2 casualties and 4 injured. In terms of fire statistics, **household management** shows the second greatest number of fires-1 821 fires occasioning direct material damage at about 129 million. SKK, killing 41 people. Least number of fires was recorded in the **commercial** sector**,** with 132 direct material damage totalling 43.3 mil. SKK.

Relationship between number of fires and number of killed or injured persons in the years 1995 - 2005



Relationship between number of fires and number of casualties or amount of saved values in the years 1995 - 2005



Source: SEI

Floods

Floods and natural phenomena with impact made stronger by human activities. Since 1997, the territory of the Slovak Republic has experienced annual floods of great magnitude. In terms of time and space, the floods are distributed unevenly. Spring floods are caused by long-term intensive rainfalls or by a sudden warm weather with rapid melting of snow. The floods of June and July are caused by intensive local rainfalls.

In 2005, there were 237 municipalities afflicted by floods. 791 residential houses were flooded. This number included 74 destroyed or temporarily uninhabitable houses. Further, 35 administrative buildings schools and medical facilities were flooded, together with 35 production facilities, 715 household wells, 8 770.5 hectares of the agricultural land, 22 hectares of the forest land, and 445 hectares of land inside the towns and villages. The floods damaged 68 bridges and 69 benches, together with 96.5 km of river bank fortification, and 131 km of dams. 2 411 inhabitants felt the aftermath of the floods, including 125 persons who had to be evacuated. 99 inhabitants temporarily lost their housing. 62 people were rescued during rescue operations.

Floods aftermath over the period of 1999-2005

Year	Number of flood stricken residential areas	Flooded Territories (ha)	Damages by floods (mil. SKK)	Costs (mil. SKK)		Total costs and damages (mil. SKK)
				Rescue activities	Maintenance and safety activities	
1999	682	181 433	4 460.90	58.30	65.10	4 584.30
2001	379	22 993	1 960.60	57.10	32.10	2 049.80
2002	156	8 678	1 525.70	58.10	50.10	1 639.90*
2003	41	744	43.90	5.69	4.20	53.79
2004	333	13 717	1 051.80	37.23	102.93	1 191.96
2005	237	9 237	800.46	67.82	80.64	948.92

* including also the sum of 6.0 mil. SKK – cost of anti-mosquito chemical spray treatment Source: SEI

Strategy of the State Environmental Policy *leads to integration of the Slovak Republic as an independent state into the global alliance, which creates precondition of achieving the European and global environmental safety, peace and sustainable development and life on Earth ...*

from the document on State Environmental Policy Strategy from 1993

ENVIRONMENTAL CARE

• ENVIRONMENTAL LAW

The published Slovak legislation in 2005 included 7 laws, 4 SR government ordinances, 32 MoE SR regulations, and 6 notices on the published MoE SR decrees.

Acts

- Act 15/2005 Coll. on protection of the EU wildlife animals and plants, regulation of their trade, and on the amendment to other laws
- Act 77/2005 Coll., which amends Act 151/2002 Coll. on the use of genetic technologies and genetically modified organisms as amended by Act 587/2004 Coll.
- Act 230/2005 Coll., which amends Act 442/2002 Coll. on public water supply and public sewerage systems, and on amendment to Act No. 276/2001 Coll. on regulation in network sectors as amended by Act 525/2003 Coll., Act 364/2004 Coll., and Act 587/2004 Coll.
- Act 277/2005 Coll., which amends Act 261/2002 Coll., on the prevention of major industrial accidents, and on amending laws pursuant to Act 525/2003 Coll., and Act 587/2004 Coll.
- Act 491/2005 Coll. on environmental inspection and registration within the European Community scheme for environmental management and audit, and on amendment of some laws
- Act 532/2005 Coll. which amends Act 245/2003 Coll. on integrated prevention and control of environmental pollution, and on amendment to some laws pursuant to Act 205/2004 Coll., Act 220/2004 Coll., Act 572/2004 Coll., and Act 587/2004 Coll.
- Act 571/2005 Coll. which amends Act 478/2002 Coll. on air protection, amending Act 401/1998 Coll. On air pollution fees as amended (Air Act) as amended by Act 245/2003 Coll. and Act 525/2003 Coll., Act 541/2004 Coll., Act 572/2004 Coll., Act 587/2004 Coll., Act 725/2004 Coll., and Act 230/2005 Coll.

Government Ordinances

- SR Government Ordinance 220/2005 Coll. became effective. The Resolution defines obligatory limits for packaging waste recovery and for the scope of its recycling in relation to total weight of packaging waste
- SR Government Ordinance 296/2005 Coll. which introduces requirements on the quality and qualitative goals for surface water, as well as the limit indicator values for wastewater and special water contamination
- SR Government Ordinance 388/2005 Coll., which sets the limits for the treatment of electric waste, and for recovery and recycling of components, material, and substances
- SR Government Ordinance 438/2005 Coll. on details of the application for the remittance of compensation for limiting the common land use, and on approaches to calculate the compensation

MoE SR Regulations

- MoE SR Regulation 29/2005 Coll. which defines details on designation of water management sources, on water protection measures, and on technical treatments within the water management source protection zones
- MoE SR Regulation 100/2005 Coll. which defines details of handling hazardous substances, on proper development of the rescue plan, and on the procedure to face exceptional deterioration of water
- MoE SR Regulation 101/2005 Coll., which defines details on the water guard duty
- MoE SR Regulation 102/2005 Coll., which amends MoE SR Resolution 53/2004 Coll., which sets requirements for the fuel quality and record keeping activities
- MoE SR Regulation 110/2005 Coll., which executes a number of provisions on the protection of the EU wildlife animals and plants, regulation of their trade, and on amendment to other laws
- MoE SR Regulation 157/2005 Coll., which amends Act 587/2004 Coll., on the Environmental Fund, and on amendment to other laws
- MoE SR Regulation 173/2005 Coll., which designates the Special Protected Area of Horná Orava
- MoE SR Regulation 208/2005 Coll., on handling electrical devices and electrical waste
- MoE SR Regulation 209/2005 Coll., which amends MoE SR Resolution 126/2004 Coll. on authorization, issuing of experts opinions in the area of waste, on nomination of persons entitled to issue opinions, and on testing the professional skills of these persons
- MoE SR Regulation 210/2005 Coll., on execution of some provisions of the law on packaging
- MoE SR Regulation 211/2005 Coll., which lists the major water management streams and watercourses
- MoE SR Regulation 216/2005 Coll., which designates the Special Protected Area of Malé Karpaty

- MoE SR Regulation 221/2005 Coll., which defines details relating to the occurrence and assessment of the state of surface water and groundwater, their monitoring, and record keeping of water and the water situation
- MoE SR Regulation 224/2005 Coll., which sets details on designation of watershed areas, environmental objectives, and on water planning.
- MoE SR Regulation 259/2005 Coll., which defines details relating to water supply for emergency situations periods
- MoE SR Regulation 260/2005 Coll., which amends MoE SR Resolution 706/2002 Coll., on sources of pollution, emission limits, on technical demands and general operation conditions, on the pollutants register, on categorizing of air pollution sources, and on the requirements to ensure dispersion of pollutants pursuant to MoE SR Resolution 410/2003 Coll.
- MoE SR Regulation 359/2005 Coll., which amends MoE SR Resolution 127/2004 Coll., on the rates to calculate payments to the Recycling Fund, on the register of goods, material, and devices, for which a contribution into the Recycling Fund must be paid, and on details and the contents of the application to the Recycling Fund
- MoE SR Regulation 377/2005 Coll., which designates the Special Protected Area of Lehnice
- MoE SR Regulation 384/2005 Coll., which sets details on the content of the flood plans, their approval, and updating
- MoE SR Regulation 385/2005 Coll., which defines details regarding the institution of the forecast flood service, and the alarm and notification service
- MoE SR Regulation 386/2005 Coll., which defines details on the submission of interim informative reports during floods and summary reports on the duration and aftermath of floods and on adopted measures
- MoE SR Regulation 387/2005 Coll., which establishes details on assessments and remuneration for flood relieve works, flood rescue works, damages by floods, and costs of the operation of state administration authorities for flood protection
- MoE SR Regulation 399/2005 Coll., which executes Act 151/2002 Coll., on the use of genetic technologies and genetically modified organisms as amended
- MoE SR Regulation 433/2005 Coll., which defines details on the use of the hydro energy potential of water courses
- MoE SR Regulation 451/2005 Coll., which amends MoE SR Resolution 489/2002 Coll., which executes a number of provisions on the prevention of major technological hazards and on amendment of certain laws
- MoE SR Regulation 452/2005 Coll., which amends MoE SR Resolution 490/2002 Coll., on the security of report and on the emergency plan

- MoE SR Regulation 457/2005 Coll., which defines details on the water construction manipulation code
- MoE SR Regulation 458/2005 Coll., which defines details on the execution of professional technical and safety supervision of water constructions, and on the execution of technical safety supervision
- MoE SR Regulation 575/2005 Coll., which amends MoE SR Resolution 706/2002 Coll., on sources of pollution, emission limits, on technical demands and general operation conditions, on the pollutants register, on categorizing of air pollution sources, and on the requirements to ensure dispersion of pollutants pursuant to MoE SR Resolution 410/2003 Coll.
- MoE SR Regulation 599/2005 Coll., which amends MoE SR Resolution 283/2001 Coll., on the execution of certain provision of the law on waste as amended by MoE SR Resolution 509/2002 Coll., and MoE SR Resolution 128/2004 Coll.
- MoE SR Regulation 605/2005 Coll., on details relating to disclosing of data from the records of property and the operational records on objects and facilities of the public water supply and sewerage
- MoE SR Regulation 606/2005 Coll., which executes the Act on environmental inspection and registration within the European Community scheme for environmental management and audit, and on amendment of certain laws.

Proposal
a) Of a substantial development conception, especially in the area of energy sector, mining industry, industry, transport sector, agriculture sector, forestry and water management, waste management and tourism,
b) Of landscape planning documentation of a large territorial unit and of urban units of selected towns, especially regional centres, town historical reservations, spa centres and particularly polluted locations, must include assessment in terms of its expected impacts on environment and, if necessary, also a ***proposal of measures to be taken to eliminate or diminish negative impacts.***

§ 35 par. 1 of the Act No. 127/1994 Coll. on environmental impact assessment as amended

• ENVIRONMENTAL IMPACT ASSESSMENT

In 2005, pursuant to the Act 127/1994 Coll. on environmental impact assessments as amended, there were **801 assessed** proposals for construction, facilities, and activities. Of the total number of assessed proposals, the **assessment was completed for 507** constructions, facilities and activities in 2005. The register of completed projects may be found on the Ministry of Environment's page. The register is periodically updated.

In 2005, continued the process of entering to the **Register of professionally eligible persons to carry out environmental impact assessment,** pursuant to the MoE SR Resolution 52/1995 Coll. As of the end of 2005, the Register included 417 natural persons and 42 legal entities

In the context of meeting the obligations that Slovakia accepted under the **UN ECC Convention on Environmental Impact Assessment across national boundaries** (Espoo Convention), in 2005, drafts of bilateral agreements with the neighbouring countries continued to be developed, and conditions for the full implementation of the Convention were defined. As of 2005, there was 1 bilateral agreement signed between the Slovak Republic and Austria. In order to improve cooperation with the public on environmental impact assessment across national boundaries, the project of the „*Implementation strategy of the Espoo Convention, and the Aarhus Convention*" took place in 2005. The project was supported by the European Union, federative region of Lower Austria, and the Austrian Federative Ministry of Agriculture and Forestry, and Water Management, with active participation of the federative region of Burgenlad, and the MoE SR.

Operation of the EIA **Documentation center** at SEA in Banská Bystrica continued. The center was implementing the information system on environmental impact assessment, and sharing information from archived documentation. Documentation from the MoE SR for the years 1994-2000 was transferred to the documentation center.

In 2005, the process of amending the draft of the new legislation on environmental impact assessment continued. The new legislation includes complex environmental impact assessments, which means assessing the strategic documents (policies, strategies, plans, and programs), assessment of constructions and activities, and assessment of impacts of strategic documents and constructions, facilities, and activities across national boundaries.

Integrated pollution prevention and control is a set of measures aimed at a pollution prevention, reduction of emissions to air, water and soil, reduction of waste generation and at waste recovery and disposal in order to achieve a high level of protection of the environment taken as a whole.

§ 2 par. 1 of the Act No. 245/2003 Coll. on integrated pollution prevention and control

• INTEGRATED POLLUTION PREVENTION AND CONTROL (IPPC)

IPPC was introduced into the Slovak legal codes and implemented through **Act 245/2003 Coll. on integrated environmental pollution prevention and control and on amendments of certain laws as amended (Act on IPPC).**

Objective of this Act is to reach sustainable development and ensure overall high level of environmental protection. This can be implemented through a balanced integrated assessment of all environmental components by the State administration authorities that issue licenses to operate facilities able to pollute the environment.

Slovak Environmental Inspection is the administration authority in the process of integrated licensing and issuing of integrated licenses.

As of December 31, 2005, **193 valid integrated licenses** were issued, out of the total number of **545 operations.** If the operators of these facilities plan to carry out activities after October 30, 2007, they have to have a valid integrated license by then.

The system of integrated environmental pollution prevention and control has been developed to ensure a complex collection of data and information on the IPPC. The system includes: Register of operators and IPPC operations, Register of issued integrated licenses, Integrated register of information system (IRIS), Register of environmental quality norms, BAT and BREF Register, and the Register of authorised persons.

Genetic technologies *shall be activities of genetic engineering and modern biotechnology, which create and use live genetically modified organisms including micro-organisms.*
Genetically modified organism *shall be an organism, of which genetic material has been altered in a way that does not occur naturally by sexual reproduction and natural recombination.*

§ 2 par. 1and § 4 par. 1 of the Act No. 151/2002 Coll. on use of genetic technologies and genetically modified organisms

• GENETIC TECHNOLOGIES AND GENETICALLY MODIFIED ORGANISMS

The area of using genetic technologies and genetically modified organisms (GMO) within the Slovak legal code is addressed by the **Act No. 151/2002 Coll. on the use of genetic technologies and genetically modified organisms as amended by the Act No. 587/2004 Coll., and the MoE SR Resolution 399/2005 executing this Act.**

The law makes it possible to use genetic technologies and genetically modified organisms in three ways:

- in enclosed areas (devices),
- intentional release, including a) introduction to the environment,
  b) introduction to the market.

Plans the use of genetic technologies and genetically modified organisms in enclosed areas is divided into four at risk categories (RC), while the RC 1 represents no or negligible risk, RC 2 means small risk, RC 3 means medium risk, and RC 4 means significant risk.

On the basis of received applications and notifications by the MoE SR in 2005, 24 facilities were entered into the register of facilities. License was given to 28 facilities for their first use of genetic technologies, while 69 facilities were given the permission to initiate the RC 1 activities, and three facilities can start operation under the RC 2 category.

As of the end of 2005, the Ministry of Environment of the SR did not issue any licenses for the introduction of genetically modified organisms into the environment and on the market, nor did it receive any applications for issuing such licences.

List of licensed products for the European Union market under the C Annex to the Directive 2001/18/EC, as of December 31, 2005

Application number	Product	Product label	Modification	User	Member states that issued the permission to market
C/NL/94/25	chicory	RM3-3, RM3-4, RM3-6	tolerance to herbicide	Bejo-Zaden BV	Holland
C/NL/96/14	clove	line 4, 11, 15, 16	change to flower color	Florigene	Holland
C/NL/97/12	clove	line 66	extended longevity of cut flowers in the vase	Florigene	Holland
C/NL/97/13	clove	line 959A, 988A, 1226A, 1351A, 1363A, 1400A	change to flower color	Florigene	Holland
C/F/94/11-03	corn	Bt-176	tolerance to herbicide, resistance to insects	Syngenta Seeds, Inc.	France
C/F/95/12-03	corn	T25	tolerance to herbicide	Bayer CropScience	France
C/F/95/12-03	corn	MON810	resistance to insects	Monsanto Company	France
C/UK/96/M4/1	corn	Bt-11	tolerance to herbicide, resistance to insects	Syngenta Seeds, Inc.	England
C/ES/00/01	corn	NK603	tolerance to herbicide	Monsanto Company	Spain
C/DE/05/9	corn	MON863	resistance to insects	Monsanto Company	Germany
C/NL/94/10	corn	1507	tolerance to herbicide, resistance to insects	Pioneer Hi-Bred International, Mycogen Seeds	Holland
C/UK/94/M4/1	rapeseed	MS1, RF1	tolerance to herbicide	Bayer CropScience	England
C/UK/95/M4/1	Spring rapeseed	Topas 19/2, HCN92	tolerance to herbicide	Bayer CropScience	England
C/UK/94/M4/1	soy	GTS 40-3-2	tolerance to herbicide	Monsanto Company	England
C/F/93/12-03	tobacco	PBD6-238-2	tolerance to herbicide	SEITA	France
C/F/1/96-03	testing set		testing set to detect antibiotic resistance in milk	Valio Oy	Finland
C/D/92/I-1	vaccine		pork vaccine for the Aujeszkeho disease	Vemie Veterinar Chemie Gmbh	Germany
C/B/92/B28	vaccine		vaccine for the rabies in animals	Rhône-Merieux	Belgium and France
C/D/93/I-2	vaccine		pork vaccine for the Aujeszkeho disease	Vemie Veterinar Chemie Gmbh	Germany

Source: MoE SR

Commission for the biological safety (commission) is the professional consulting body to the Ministry of Environment of the Slovak Republic in the area of biological safety. The Commission consists of a broad spectrum of professionals, scientists, public officers nominated to represent the affected resorts, representatives of the public including the users (producers, importers, salespersons, etc.), and the general public. The Commission cooperates with the Association of experts.

In 2005, there were 4 sessions of the commission, and 3 e-mail conferences, all under the provision of the commission's bylaws. At the mention sessions, the Commission commented on the statements adopted by the EU, proposals to issue licenses for the first use of the facilities for genetic technologies, and on the notification reports on launching of operations in facilities.

Eco-label *is a label, which on the basis of a legally specified verification certifies, that a particular product meets requirements above the standard from the point of environmental protection, when compared with other products of the same group of products.*

§ 2 par. 2 of Act No. 469/2002 Coll. on Environmental eco-labelling

• ENVIRONMENTAL ASSESSMENT AND PRODUCT LABELLING

Conditions and strategy for licensing and using the national label "*Environment-friendly product*" (EFP), as well as the EC environmental label „*European Flower*" are governed by the **Act No. 469/2002 Coll. on environmental product labelling as amended by Act No. 587/2004 Coll.**. The MoE SR Directive No. 258/2003 Coll. was subsequently adopted, which executes the Act on environmental product labelling. With the goal to ensure reduction of negative impacts of the products on the environment, the **Program of environmental product labelling for the years 2004-2008** was adopted in 2004. In February 2005, 3 new MoE SR Decrees came into effect. They define special conditions for a group of products based on wood (MoE SR Decree No. 1/2005), paint substances (MoE SR Decree No. 2/2005), and agents for winter maintenance (MoE SR Decree No. 3/2005). Decree for construction machines used for terrestrial works (MoE SR Decree No. 4/2005) came into force in April 2005. For the group of shredded limestone products, a new directive came into force in July of the same year (Directive No. 0024/2005).

List of effective NPEHOV* directions and decrees of the MoE SR in 2005

Product group	NPEHOV Direction/MoE SR Decree	Effective
Electrical refrigerators and freezers for households	NPEHOV Directive No. 0009/2002	III/2002 – III/2005
Gas-fuelled heating boilers equipped with atmospheric burner	NPEHOV Directive No. 0010/2002	III/2002 – III/2005
Gas-fuelled heating boilers equipped with pressure burner	NPEHOV Directive No. 00011/2002	III/2002 – III/2005
Textile products	NPEHOV Directive No. 0020/2002	XI/2002 – XI/2005
Adsorbents	NPEHOV Directive No. 0021/2002	XI/2002 – XI/2005
Biodegradable plastic packaging material	NPEHOV Directive No. 0013/2003	V/2003 – V/2006
Washing agents for textiles	NPEHOV Directive No. 0014/2003	V/2003 – V/2006
Hygiene tissue paper and its products	NPEHOV Directive No. 0022/2003	V/2003 – V/2006
Non-burnt walling material	MoE SR Decree No. 1/2004	IV/2004 – IV/2007
Wire-stone constructions	MoE SR Decree No. 2/2004	IV/2004 – IV/2007
Shredded limestone	NPEHOV Directive No. 0024/2005	VII/2005 – XII/2007

Wood-based boards	MoE SR Decree No. 1/2005	II/2005 – II/2008
Paint substances	MoE SR Decree No. 2/2005	II/2005 – II/2008
Agents for winter maintenance	MoE SR Decree No. 3/2005	II/2005 – II/2008
Construction machines for terrestrial works	MoE SR Decree No. 4/2005	IV/2005 – IV/2008

* National programme of environmental assessment and product labelling Source: MoE SR

In the assessed year of 2005, the MoE SR registered 2 new subjects entitled to use the label **"Environmental-friendly product"** for the broad portfolio of wood-concrete shapers and wire-stone building construction. Towards the end of the year, there were **96 products** with the right to use the national environmental label. These products belong to the groups of products including mainly textile products, products from the tissue paper, adsorbents, walling material, shredded limestone, painting material.

Number of products with the right to use the EFP labelling

Year	Number of products (EFP)
1997	11
1998	22
1999	24
2000	20
2001	26
2002	29
2003	47
2004	79
2005	96

Source: SEA

Decision of the Minister of environment No. 16/2005-6.3 novelized the area of jurisdiction and total scope of activities of the advisory body to the Minister in the area environmental assessment in product labelling, through establishing the Commission for environmental labelling.

In relation to awarding the label **"European flower“,** the MoE SR participated in the sessions of the Board for the European Environmental Labelling, which adopts final decisions in the area environmental labelling. Its three working committees include the committee for strategy, committee for management, and the committee for environmental labelling marketing. European environmental labelling covers 23 product categories, with adopted pertinent EU decisions. These decisions define conditions for awarding the label „ European flower“. In the Slovak conditions, there is an ongoing communication with the Slovak producers of tissue paper and textile products, to implement the process of obtaining the "European flower“ label. Within the European environmental labelling scheme in 2005, the label was awarded to 737 products, with most products (158) been in the group of paint colours and varnishes, followed by textile products (119), and the universal cleaning agents 101. Products from the tissue paper (83) together with flooring material products (64) represent a big group of products. Increased interest in the European label was recorded in 2005, in the area of services such as tourist hostels (38 of them with the received label, and approximately 30 not yet completed), and camping services (9 of them with the received label, and 20 still in the process of assessment).

Environmental management systems *is the part of the overall management system in an organisation which implements the organisational structure, planning activities, responsibilities, practices, procedures, processes and sources for preparation, implementation, achievement, examination and maintenance of the environmental policy.*

§ 5 par. 1 of the Act No. 468/2002 Coll. on System of Eco-management and audit scheme

• ENVIRONMENTAL MANAGEMENT AND AUDIT

In 2002, in Slovakia adopted the Act No. 468/2002 Coll., on the system of environment-focused management and audit, and subsequently the MoE SR Resolution No. 90/2004 Coll., which executes Act on the system of environmental management and audit. In order to reach full harmonization of the Slovak legislation with the EU provisions, in 2005, the legislation was replaced by a newly adopted Act No. 491/2005 Coll., on environmental inspection and registration within the European Community scheme for environmental management audit, and on amendment of certain laws by MoE SR Directive No. 606/2005 Coll., which executes Act No. 491/2005 Coll. on environmental inspection and registration within the European Community scheme for environmental management and audit, and on amendment of certain laws.

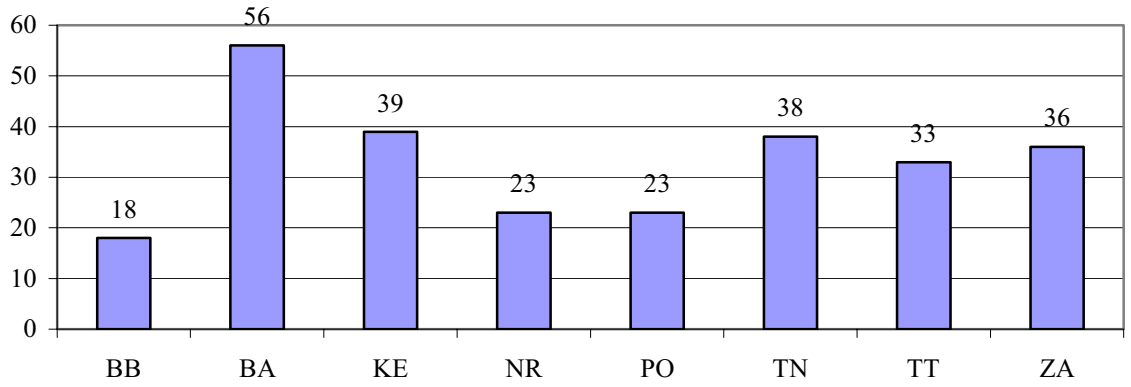
The Slovak National Accreditation Service (SNAS) created a set of methodological directives for accreditation, implemented the certification testing for the first environmental EMAS inspectors in Slovakia, and accredited the first legal person to carry out environmental inspection for registration within EMAS.

Slovak organizations in the Slovak Republic who obtained the **EMAS Certificate** include:

- **QUELLE Slovakia Ltd. Bratislava (2002)**
- **Messer Slovnaft Ltd Bratislava (2004)**

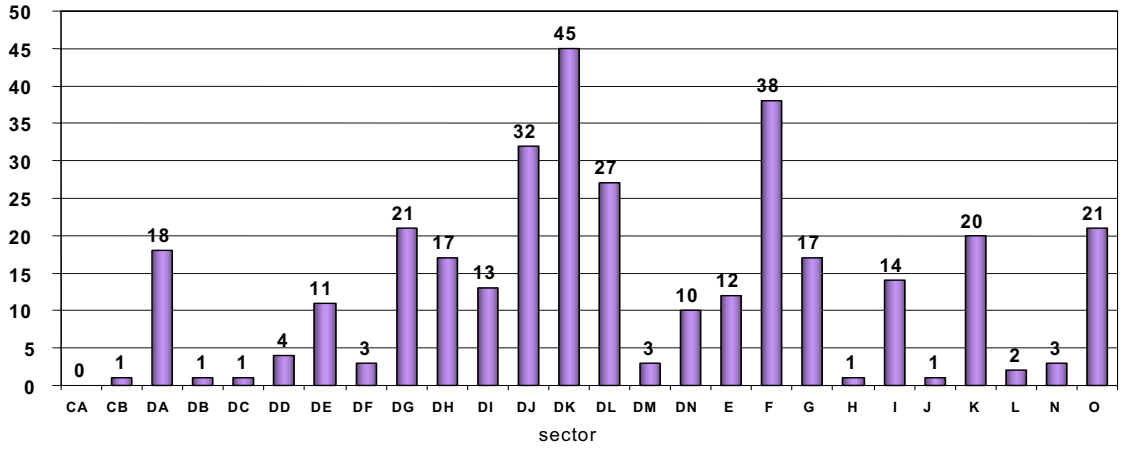
Environmental management system (EMS) pursuant to STN EN ISO 14001 in Slovakia was implemented in **266 organizations** whose functionality was certified.

Number of organizations with certified EMS in the Slovak Republic by upper-tier geographical units



Source: SEA

Number of organizations with certified EMS in the Slovak Republic by sectors



Source: SEA

CA -extraction of energy raw material
CB -extraction of non-energy raw material
DA-production of foods, drinks, and tobacco products
DB-production of textile and leather products
DC-processing of leather and manufacture of leather products
DD-processing of wood and wood products
DE-production of cellulose, paper, and paper-based products, publishing and printing
DF-production of coke, refined oil products, and nuclear fuel
DG-production of chemicals, chemical compounds and chemical fiber
DH-production of rubber-based products and plastics
DI-production of other nonmetal mineral products
DJ-production of metals and metal-based products
DK-manufacture of machines and devices otherwise non-classified
DL -production of electrical and optical devices
DM -production of transport vehicles
DN-production otherwise non-classified
E-electricity, gas, and water production and distribution
F- construction
H-hotels and restaurants
I-transport, storing, posts and telecommunications
J-financial mediation
K-immovable, leasing and business activities
L-public administration and defence, obligatory welfare insurance
M-education
N-health and social assistance
O-other social and personal services

ISO 14000 norms introduced into the STN system by the end 2005

1. STN EN ISO 14001 (83 9001) Systems of environmental management
   Requirements with instructions for use
   (ISO 14 001:2004)

2. STN ISO 14004 (83 9004)	Systems of environmental management General instructions including policies, systems and support strategies (ISO 14 004:2004)
3. STN ISO 14015 (83 9015)	Environmental management Environmental assessment of sites and organizations (EASO) (ISO 14015:2001)
4. STN EN ISO 14020 (83 9020)	Environmental labels and statements General policies (ISO 14 020:2000)
5. STN EN ISO 14021 (83 9021)	Environmental labels and statements Issuance of statements on environmental qualities (Environmental labelling type II) (ISO 14021:1999)
6. STN EN ISO 14024 (83 9024)	Environmental labels and statements Environmental labelling type I. Principles and approaches (ISO 14024:1999)
7. STN ISO/TR 14025 (83 9025)	Environmental labels and statements Environmental statements type III (ISO/TR 14025:2000)
8. STN EN ISO 14031 (83 9031)	Environmental management Environmental practice evaluation. Instructions (EN ISO 14031:1999)
9. STN ISO/TR 14032	Environmental management Examples of environmental practice evaluation . (EPE) (ISO/TR 14032:1999)
10. STN EN ISO 14040 (83 9040)	Environmental management Lifecycle assessment. Principles and structure (EN ISO 14040:1997)
11. STN EN ISO 14041 (83 9041)	Environmental management Lifecycle assessment. Definition of goal and scope, and inventory analysis (EN ISO 14 041: 1998)
12. STN EN ISO 14042 (83 9042)	Environmental management Lifecycle assessment. Lifecycle impact assessment. (ISO 14042:2000)
13. STN EN ISO 14043 (83 9043)	Environmental management Lifecycle assessment. Lifecycle interpretation (ISO 14043:2000)
14. STN ISO/TS 14048 (83 9048)	Environmental management Lifecycle assessment. Data documentation format (ISO/TS 14048:2002)

15. STN ISO/TR 14049 (83 9049)	Environmental management Lifecycle assessment. Examples of using the ISO 14 041 to define goal and scope, and inventory analysis (ISO/TR 14049:2000)
16. STN ISO 14050 (83 9050)	Environmental management Glossary (ISO 14050:2002)
17. STN ISO/TR 14062 (83 9062)	Instructions to include environmental aspects into norms for products (ISO GUIDE 64:1997)
18. STN ISO/TR 14062 (83 9062)	Environmental management Integration of environmental aspects into product design and development (ISO/TR 14 062:2002)
19. STN 83 9066	Environmental management General requirements for authorities carrying out assessment and inspection/registration of environmental management systems (EMS) (ISO/IEC GUIDE 66:1999)
20. STN EN ISO 19011 (01 0330)	Instructions to audit quality management system and/or environmental management system (ISO 19011:2002)

Environmental goals, set for reaching good condition of surface waters and for good condition of underground waters must be secured by implementation of programme of arrangements, which are specified in the plan of watercourses management by 31 December 2015.

§ 16 par. 1 of the Act No. 364/2004 Coll. on Water Sourses, changing and amending some laws (Water Act)

• ECONOMICS OF ENVIROMENTAL CARE

State budget and investment policy

Funds that pertain to environmental protection and development were released from the state budget of the Slovak Republic through subsidies from budget chapters at different Ministries and from the Environmental Fund.

Environmental investments of government departments of SR financed from the state budget in 2005 (thous. SKK)

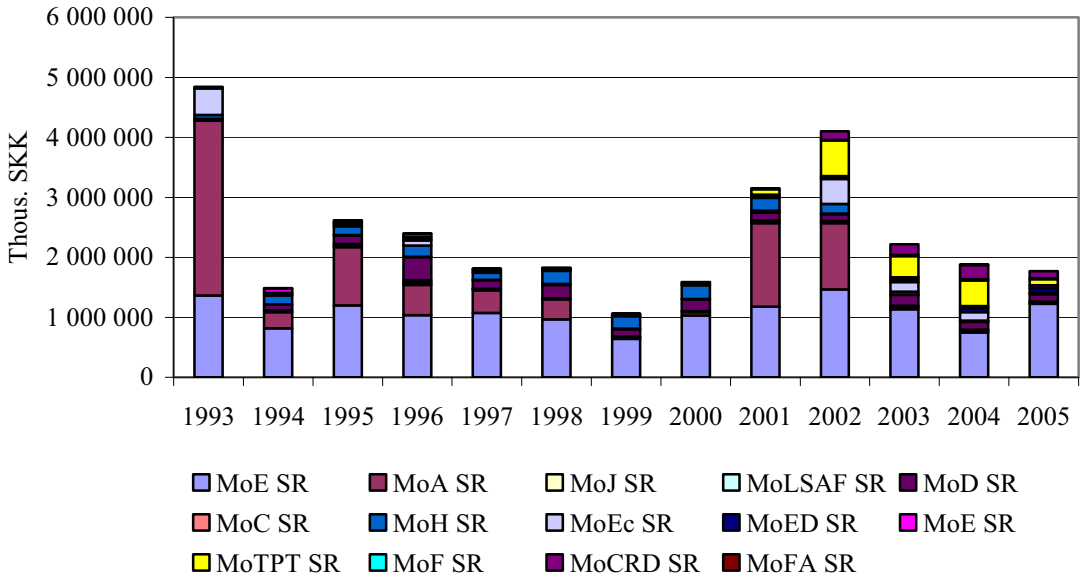
Department	WWTP Sewages	Other WM actions	Waste manage-ment	Air Protection	Others	Total	%
MoE SR	745 293	348 737	75 400	33 315	21 291	1 224 036	69.17
MoA SR	2 628	27 234	0	0	0	29 862	1.69
MoJ SR	0	3 308	0	7 057	0	10 365	0.59
MoLSAF SR	0	0	0	0	0	0	0
MoD SR	63 273	0	0	31 162	26 804	121 239	6.85
MoC SR	0	0	0	0	0	0	0
MoH SR	2 543	450	0	0	20 000	22 993	1.30
MoEc SR	0	0	0	0	0	0	0
MoED SR	11 250	5 660	0	61 084	0	77 994	4.41
MoEd SR	5 353	25 260	10 388	8 674	1 197	50 872	2.87
MoTPT SR	60 065	13 310	0	16 975	10 904	101 254	5.72
MoF SR	593	0	0	11 783	0	12 376	0.70
MoFA SR	0	0	0	0	0	0	0
MoCRD SR	80 674	37 839	0	0	0	118 513	6.70
Total	**971 672**	**461 798**	**85 788**	**170 050**	**80 196**	**1 769 504**	**100.00**

Source: Environmental fund, Proper resorts

During the period 1993-2005, Ministry of Environment SR designating the sum of 13.9 billion SKK to environmental investments, the Ministry of Labour designated the sum of 8.1 billion SKK, and the

Ministry of Defence of the Slovak Republic designated the sum of 1.99 billion SKK. **Total environmental investments** for the period 1993-2005 in Slovakia represent the sum of **30.8 billion SKK.**

Environmental investments of government departments of SR financed from the state budget (1993 – 2005)



Source: Environmental fund, MoE SR

Budget grants determined on realization of environmental programs

The environmental fund was established on January 1, 2005, through **Act 587/2004 Coll., on environmental fund and amendment to certain laws.**

Review of financed grants in 2005

Area of budget grants	Number	SKK
Protection of air and of ozone layer	24	33 315 000
Protection and rational efficiency of water	475	1 094 029 570
Development of waste management	82	75 400 000
Protection of nature and lands	11	6 430 000
Environmental education and promotion	20	14 861 000
Total	**612**	**1 224 035 570**

Source: Environmental fund

Economic tools

- **Fees for pollution and exploitation of natural resources**

In 2005, the greatest portion of fees for pollution of environment came from air pollution fees (743.238 bill. SKK).

Gains from selected economic tools exercised in 2005 (thousand SKK)

Sort of payment	2005	Receiver
Charges for polluting:		
Charges for dealing with fabrics and products damaging the ozone layer	173	Environmental fund
Charges for pollution of air	743 238	Environmental fund
Retributions for tapping of waste water	181 704	Environmental fund
Charges for loading of wastes	360	Environmental fund
Charges EIA	24	Environmental fund
Charges for exploitation of natural resources		
Retributions for taking of subterranean waters	349 856	Environmental fund
Retributions for taking of surface waters	x	catchments area enterprises
Retributions for taking water from public water-supplies	x	water and sewerage enterprises
Conscriptions for occupation of forest land	x	proprietor
Settlements for quarrying field	2 157	SB SR
Settlements for yielding spaces	5 848	Environmental fund
Settlements for mined minerals	48 418	Environmental fund
Settlements for loading of gases and liquids in natural rocky-structures and subterranean places	16 985	Environmental fund

Source: Environmental fund

- **Fines imposed by the State administration environmental authorities**

State administration environmental authorities impose fines for non-compliance with the provisions set forth under generally binding legal policies.

Penalties laid by executive administration for the environment during the period of 1993 - 2005 (thousand SKK)

Sector	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
Protection of air	9 693	7 878	3 512	6 346	2 083	3 771	2 334	1 644	2 220	6 176	1 847	4 328	6 016
Protection of water	12 635	11 480	10 152	9 705	8 769	7 850	6 733	6 038	8 887	5 858	8 030	9 540	10 603
Wastes	5 894	18 261	17 517	15 068	10 731	8 659	7 012	9 213	9 269	3 743	6 129	7 899	6 994
Protection of nature	662	401	1 144	8 452	852	1 893	1 659	1 498	1 581	3 532	1 255	1 421	1 607
Penalization							692	417	4 244	1 357	353	553	192
Building law								1 091	5 671	7 135	3 716	917	469
Packaging											5	2	1
Prevention of gross industrial averages											4	7	31
Trading with endangered species of animals and plants											43	73	81
Public water-supply and sewages													1
Integrated prevention and control													125
GMO													150
Geological works													5
Total	**28 884**	**38 020**	**32 325**	**39 571**	**22 435**	**22 173**	**18 430**	**19 901**	**31 872**	**27 801**	**21 382**	**24 740**	**26 275**

Source: MoE SR

In 2005, the greatest sum of fines was imposed in the area of water protection (10.603 bill. SKK), in the area of waste management (6.994 mil. SKK) and in the area of air protection (6.016 mil. SKK).

Environmental gains and expenses

Financial indicators of environmental protection in Slovakia are systematically monitored by the Statistical Office of Slovak Republic for 1998 – 2005, both as investments – common internal company expenses and yields for protecting the environment, and as expenditures of individual budget chapters.

Environmental gains and expenses according to contemporary way of statistical showing, during the period of 1998 - 2005 (thousand SKK)

Domain of gains and expenses	1998	1999	2000	2001	2002	2003	2004	2005
Investments on protection of environment covered from state sources	1 221 075	972 013	899 167	1 195 411	1 070 774	891 491	797 000	1 027 000
Investments on protection of environment covered from foreign sources	7 008 421	682 031	377 289	133 748	2 164 044	328 000[1)]	135 000[1)]	802 000[1)]
Current costs of protection of the environment	7 036 448	13 254 532	6 666 920	9 209 273	11 485 181	11 389 498	13 886 000	15 100 000
Intradepartmental disbursement– wage	434 349	1 476 547	508 619	612 137	842 778	877 277	912 000	1 068 000
Intradepartmental disbursement – other	3 188 770	4 281 270	3 083 225	4 892 388	5 579 150	5 290 254	4 849 000	5 373 000
Disbursement of organization on protection of the environment covered by other subject Charges and payments to public organs and organizations	2 464 240	5 455 697	2 253 695	2 653 205	2 919 064	2 991 248	1 492 000	4 345 000
Payments to private person or organizations	949 089	2 041 018	821 381	1 051 543	2 144 189	2 230 719	6 631 000	4 314 000
Profits from the protection of the environment Sales from selling of products, tools and components	610 971	536 144	641 788	659 868	709 743	106 022	111 000	52 000
Sales from selling of technologies	509	3 300	1 882	16 116	1 100	30	0	0
Sales from provided services	328 985	412 828	307 421	477 601	1 056 806	1 497 401	4 497 000	5 613 000

[1)] without expenses of municipalities

Source: SO SR

Enlightenment activities *increase the general cultural and awareness and educational level of people by... improving their relationship with their own state, and towards the* ***environmental care.***

§ 2 par. 2 of the Act No. 61/2002 Coll. on Enlightenment Activities

• SCIENCE, RESEARCH AND ENVIRONMENTAL EDIFICATION

Science and research

In 2005, environmental research activities focused on the following priorities:

- introduction of ecology-friendly waste management,
- nature and landscape protection
- environmental monitoring, information, and alarm system,
- protection and rational use of the rock environment,
- sustainable spatial development and physical planning,
- air and ozone layer protection,
- environmental economics and financial engineering of environmental investments.

Environmental edification

Environmental education is a critical part of the whole process of education. For that reason, activities of environmental sector continued with the basic strategy of the previous time period in the area of the Environmental education strategy. These activities were supported by organizations participating under the MoE SR, MoED SR, as well as nongovernment organizations.

In 2005, activities were carried out at the national, regional, as well as local level. They addressed the issue of lifelong environmental education, focused on informal education for different levels of the education system, public awareness raising, and on professional education of environmental experts.

Major activities in 2005 included for example:

- **Presentations and exhibitions**

- Enviro Nitra
- Ekotechnika - Hydrotec Bratislava

- AQUA Trenčín
- Kamenár Trenčín ("stonecutter“) Trenčín.

◆ **Conferences, seminars, lectures, training sessions**

- Calamities in protected areas
- World Water Day – X. annual international conference
- Enviro-i-fórum
- Hydrogeochémia 2005 – SGIoDS international and scientific conference
- Man and Water - 13. Slovak hydrogeological conference
- III. Slovak geothermal conference
- HYDROGEOLOGICAL DAYS 2005 - conference of young water managers, WRI
- Environmental education program
- Professional training of public employees and workers of specialized state administration authorities in the area environmental protection.

◆ **Festivals, competitions, films, and projects for the public**

- ENVIROFILM 2005
- International Danube Day 2005
- Hypericum – physical wellness and educational competition for the youth
- Summer school of environmental protection
- Green school
- Living nature
- Eco-packs
- Environmental education for the challenged youth
- Project "School in the Museum" (SMM)
- Living Gallery Project (SMM)
- Geo Park of Banská Štiavnica.

◆ **Publication activity**

Major periodicals published in the sector of environment in 2005 included the MoE SR Journal, Enviromagazín magazines, Mineralia Slovaca, Slovac Geological Magazin, Protected areas of Slovakia, Protection of the Slovak Nature, Water management bulletin, publications of the State of the environment report, Water in the Slovak Republic, Slovak Karst Journals, Naturae Tutela, Sinter bulletin, ZOO news.

Besides these periodicals, the edition plan included annual reports, journals from various events, educational methodological workbooks, taxonomic identification guides for plant and animal species, advertisements and educational brochures, posters, pamphlets, cave guides, maps.

Every year the Minister of environment designates a portion of the MoE SR funds to fund small environmental projects.

- **Grants**

The **"Green Project“** grand scheme is one of the possibilities for specific financial assistance to environmental activities carried out by nongovernment organizations. Therefore, green projects represent the functional instrument that helps to increase the level of environmental awareness among the general public. These projects focused on the implementation of specific activities to preserve endangered nature and landscape areas, or the implementation of environmental protection programs. The applications includes 87 projects, 9 of them were funded by total of 493 050 SKK.

Access to Environmental Information

In 2005, the MoE SR submitted to the Slovak government a proposal for the Slovak accession to the international EEC UN convention on access to information, public participation and access to justice in environmental matters (Aarhus Convention). The Slovak Parliament approved the proposal and supported the accession. The Slovak President signed the agreement on accession on October 31. 2005.

In 2005, the central register of applications pursuant to Act No. 211/2000 Coll., on free access to information and amendment to certain laws, registered 5 340 applications. Greatest number of registered applications submitted by the public came through the „Green Line“, 4 300 applications were registered through direct telephonic conversation, 44 applications were sent in by mail and subsequently registered, 947 proposals were e-mailed, and 8 proposals were faxed.

The public office implemented the agenda pursuant to Act No. 205/2004 Coll., on gathering, maintenance, and dissemination of environmental information and on amendment of certain laws through a periodically updated Internet site.

Human kind is a part of the nature *and life depends on undisturbed functioning of nature systems, which provide for resources of energy and nutrition,... Permanent benefit from the nature depends on maintenance of basic ecological processes of vitally important systems, from* ***diversity of life forms,*** *which are threatened by extreme exploitation and destruction of areas from the man's side.*

The World Chart on Nature, adopted by the UN General Assembly on 28 October 1982

INTERNATIONAL CO-OPERATION

• INTERNATIONAL ORGANISATIONS AND STRUCTURES

European Union

In 2005, MoE SR contributed to the creation of the Community's legislation, which ultimately has an effect on the creation of the national legislation. Meanwhile, the process of transposition and implementation of effective environmental legal norms continued.

Representatives from the sector of environment, together with invited specialists from other sectors, regularly **attended the sessions of the EU Council working groups**. In 2005, there were **4 sessions of the official EU Council for environment** (10.3.2005, 24.6.2005, 17.10.2005, 2.12.2005) and one informal EU Council for environment session organized in Great Britain.

Participation of the Slovak representatives in the EU sessions has the objective **to defend the national interests while looking for a commonly-acceptable compromise**. Coordination of the national position therefore plays a very important role. Coordination of the SR strategy toward the EU in the area of environment on the national level is supervised by the MoE SR. Discussion also included the following issues dealing with the supra-sectoral jurisdiction: preparation of the supporting material and preliminary position statements for the session of the SR Parliament Committee for European Affairs, coordination of proceedings on the breach of the EC Founding Treaty, etc., duties to report to the European Commission, problems with translation of documents, corrections to valid legislation, interpretation within the EU Council working groups. Participation of the MoE SR representatives in the EU 1 Affairs Committee at the MFA SR ensured the preparation and approval of positions for the COREPER sessions in the area of environment

MoE SR representatives periodically attended also the **PS III sessions Transportation and Environment of the European Union National Convent**. There were two PS III Environment

session organized in 2005 (October 5, 2005 and December 5, 2005). The sessions addressed the issues of developing the SR positions to the EU policies and documents in the area of environment, as well as transposition and implementation of the European Parliament and Council Directive 2001/42/EC on the assessment of the effects of certain plans and programmes on the environment, and the preparation of Slovakia for the implementation of the EU Water Framework Directive within the water management strategy by 2015.

The following legal instruments were addressed and approved by the EU Council for Environment in 2005:

- European Parliament and Council Proposal for Directive on protection of groundwater against contamination;
- Proposal for Directive aimed at establishing an infrastructure for spatial information in the Community (INSPIRE);
- Proposal for Directive on the financial instrument for the Environment (LIFE+);
- REACH – preparation of a new proposal for regulation of chemicals (EP and Council Draft Directive for the Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH) which establishes the European Agency for chemical substances, and which amends Directive 1999/45/EC and the EC Regulation on persistent organic pollutants and the EP draft directive, which amends the Council Directive 67/548/EEC to be aligned with the EC Regulation and EP Council Directive on the Registration, Evaluation, Authorisation and Restriction of Chemicals).
- Proposal for Council Directive on batteries and accumulators and waste batteries and accumulators;
- Proposal for Council Directive related to bathing water management;
- Regulation on the application of the provisions of the Aarhus Convention for the EC institutions and bodies;
- Proposal for Council Regulation to ratify the Aarhus Convention by the EC;
- Proposal for Council and Parliament Directive, which introduces humane trapping standards for certain animal species;
- Parliament and Council proposal for Regulation on the establishment of the European Pollutant Release and Transfer Register and the amending Council Directives 91/689/EEC and 96/61/EC;
- Proposal for Council Regulation to complete the EEC UN Pollutant Release and Transfer Registers on behalf of the European Community;
- Proposal for Council Regulation on completion of Agreement on the Conservation of African-Eurasian Migratory Waterbirds, by the European Community;
- Proposal for the Parliament and Council Directive on Ambient Air Quality and Cleaner Air for Europe;

Strategic documents addressed at the EU Environmental Council:

- The Community Strategy concerning Mercury;
- Thematic Strategy on Better Regulation;
- Thematic Strategy on Air Pollution.

Other major themes addressed at the EU Environmental Council:

- **Climate Changes –** adopted outputs of the Council for eleventh Conference of the Parties (COP 11) to the UNF on climate change, and the first Meeting of the Parties to the Kyoto Protocol (MOP 1);
- **Restricting the influence of air traffic on climate changes;**
- **Strategic approach to international handling of chemical substances –** adopted in preparation for the international conference on handling of chemicals;
- **Subsequent steps in the area of GMO –** initial discussion on European perspectives of the best use of the GMO and on decision-making process regarding the GMO.

Priorities of the EU and the Council Presiding countries in the area of Environmental Conservation in 2005

The EU member countries rotate in their EU Council presidency every 6 months. **Luxemburg** presided over the Council in the first half of 2005, while **Great Britain** in the second. Stemming from the "Council's Operational Programme for 2005 submitted by the Luxemburg and British presidencies", their environmental priorities included mainly the following areas:

Thematic Strategies

Discussion on the seven thematic strategies submitted within the **6th Environmental Action Programme** (EAP) (soil protection, waste prevention and recycling, sustainable use of natural resources, sustainable use of pesticides, air pollution, protection and conservation of the marine environment, urban environment and corresponding areas of sustainable consumption and production including integrated product strategy) was critical for the EU environmental strategy for the upcoming years. These thematic strategies include a number of legislative as well as non-legislative initiatives.

Four key areas in the 6th EAP

The Council put maximum effort into reaching the final political agreement regarding the resolution on financial instrument for the environment (LIFE+) and the INSPIRE Directive, focused on establishment of the infrastructure for prevention and better management of potential environmental risks, with the aim to support the completion of activities under the 6th EAP.

In the area of **climate changes,** the presiding countries focused on the implementation of the EU medium to long-term strategies and objectives in the area of climate changes, and attempted to ensure the EU's ability to demonstrate its progress toward meeting the Kyoto obligations. They monitored how effectively the system of trading with emissions was implemented, and attempted to complete the proposal addressing the fluorinated greenhouse gasses.

In the area of **nature protection and biodiversity,** the Council addressed activities dealing with the EC biodiversity and the Directive that introduces the norms for humane trapping standards for certain animal species.

In the area of **environment, health, and quality of life,** the Council finalised activities on the directive relating to the management of water for bathing, and on the directive on the sulfur content of the fuel used by maritime ships. A discussion was initiated on the council regulation on the pollutant release and transfer register and on the direction on groundwater protection.

In the area of **natural resources and waste,** the presiding countries finalised the works on the directive on waste disposal from the mining industry. Significant progress was reached in the preparation of the directive on batteries and accumulators, and on carrying out the final agreement regarding the regulation on waste transport.

Environmental governance

Both presiding countries attempted to complete the activities on the Regulation, in order to make effective the Aarhus Convention and the subsequent EC decision to sign it, as well as the last step under the Aarhus agenda (proposal for the Parliament and Council Directive on Access to Justice in Environmental Matters).

Environmental technologies

Both presiding countries significantly supported the implementation of the Environmental Technologies Action Plan (ETAP) in individual EU member states.

Visegrad Cooperation (V4)

12th conference of the V4 ministers of environment was organized on June 6-7, 2005 in Bialowieza, Poland. Ministers welcomed the effective Kyoto Protocol to the framework Convention on Climate Change, and supported the need to accelerate the process of international negotiations toward the development of global, medium and long-term strategies to reduce emissions causing the greenhouse effect.

Meanwhile, the ministers exchanged experience in using the finances from Structural funds and the Cohesion Fund, and agreed to exchange information on protected areas within the NATURA 2000

network on the level of expert talks, paying special emphasis to the alignment of these areas along the common border.

Bilateral cooperation

Bilateral cooperation with the neighbouring countries including the Czech Republic, Poland, Hungary, and Austria focused primarily on the cooperation between border regions on programming and implementation of common projects with funding from the EU programmes.

In 2005, MoE SR signed a Memorandum of Understanding between the MoE SR and the Ministry for research and protection of environment of the Serbian Republic. The memorandum dealt with cooperation in the area of environmental protection (Bratislava, February 14, 2005), which created a platform for sharing of experience with the Serbian side, especially the ones relating to the process of Slovakia's accession to the EU and functioning of the Environmental Fund.

In 2005, the Slovak Republic either ratified or signed a number of **international conventions and protocols**:

- Protocol to the Convention on long-range trans-boundary air pollution to abate acidification, eutrophication and ground-level ozone (Göteborg, 30.11.1999, SR signed on 1.12.1999, SR ratified on 28.4.2005)
- International Convention for the Regulation of Whaling (Washington, 2.12.1946), and Protocol of Amendment (Washington, 19.11.1956, SR acceded on 22.3.2005)
- European Landscape Convention (Florence, 20.10.2000, SR signed on 30.5.2005, SR ratified on 9.8.2005)
- Convention on Access to information, public participation in decision-making and access to justice in environmental matters – Aarhus Convention (Aarhus, 25.6.1998, SR acceded on 5.12.2005)

Measures of the economic policy and other measures shall be designed to implement economical and social development of the Slovak Republic, and they will follow the principle of sustainable development. These measures should provide from the very beginning, that ***also aspects of environmental protection shall be fully taken into consideration*** *and that they shall be connected to the requirements of a harmonic social development.*

Article 72 par. 2 of the European Affiliation Agreement, signed between the European Union and its members on one side and the Slovak republic on the other side (Luxembourg, 4 October 1993)

• PROGRAMMES AND PROJECTS OF INTERNATIONAL CO-OPERATION

PHARE - National Programme

◆ PHARE – Twinning, Twinning light

In the area of environment, the PHARE Programme continued to focus on strengthening the MoE SR administration. It also supports of the process of approximation of legislation and its application in accordance with the EU requirements.

Financial memorandum of the **PHARE 2002 National Programme** was signed on January 10, 2003. Three (3) twinning projects were approved for the resort of environment, totalling in 4.02 mil. EUR. Their implementation continued also in 2005.

Projects implemented under financial memorandum of the PHARE 2002 National Programme

SK02/IB/EN/01: Implementation and enforcement of the directive on the release of hazardous chemical substances into water	
International partner	Italy (International Federation of United Cities and Local Administrations and of the Province of Turin)
Total financial volume	1 415 000 EUR
State of project	PROJECT WAS SUCCESSFULLY COMPLETED IN AUGUST 2005
SK02/IB/EN/02: Implementation of the directive on integrated pollution prevention and control (IPPC)	
International partner	Greece – National Technical University of Athens
Total financial volume	1 190 000 EUR
State of project	PROJECT WAS SUCCESSFULLY COMPLETED IN OCTOBER 2005
SK02/IB/EN/03: Implementation and enforcement of the Convention the Conservation of Natural Wildlife and Natural Habitats, and the Directive on Wildfowl Protection	
International partner	Germany (German Federal Ministry for the Environment)
Total financial volume	1 415 000 EUR
State of project	PROJECT WAS SUCCESSFULLY COMPLETED IN SEPTEMBER 2005

Source: MoE SR

Development of the **National PHARE 2003 Programme** was the last action before the SR joined the EU. Projects approved under the PHARE Financial Memorandum 2003 are implemented in 2004-2006, with three projects approved for the MoE SR resort. Besides large twining projects, two technical assistance projects were approved for funding within the *Unallocated Institutional Building Facility*. Their implementation started in the second half of 2004.

Projects implemented under financial memorandum of the PHARE 2003 National Programme

SK03/IB/EN/01: STRENGTHENING OF INSTITUTIONAL CAPACITIES WITHIN THE ENVIRONMENT SECTOR	
International partner	Austria (Federal Environment Agency - FEA)
Total financial volume	1 160 000 EUR
State of project	**PROJECT UNDER IMPLEMENTATION, PLANNED COMPLETION - JULY 2006**
SK03/IB/EN/02: Biological safety monitoring system (GMO)	
INTERNATIONAL PARTNER	Austria (Federal Environment Agency - FEA)
Total financial volume	1 500 000 EUR
State of project	PROJECT WAS SUCCESSFULLY COMPLETED IN AUGUST 2005
SR03/IB/EN/03: Implementation of the EU directives on electricity and electronic scrap	
International partner	Swedish Trade Council
Total financial volume	400 000 EUR
STATE OF PROJECT	PROJECT UNDER IMPLEMENTATION, PLANNED COMPLETION - NOVEMBER 2006

Source: MoE SR

Projects implemented under "the Unallocated Institutional Building Facility" of PHARE 2003 National Programme Financial Memorandum

UIBF 2003-004-995-01-04/07: Institutional strengthening in the area of management of contaminated facilities containing PCB, in Slovakia	
Partner	Dekonta, Ltd. in cooperation with the Slovak Hydro-meteorological Institute
Total financial volume	130 000 EUR
STATE OF PROJECT	PROJECT UNDER IMPLEMENTATION, PLANNED COMPLETION - JULY 2006
UIBF 2003-004-995-01-04/17: Strengthening of administration capacities of the MoE SR in the area of preparation and implementation of public-private partnership projects (PPP). In the area of national support within the EU scheme, to effectively implement the environmental acquis through environmental investment projects.	
INTERNATIONAL PARTNER	Integrated Skills Ltd, Great Britain
Total financial volume	199 999 EUR
State of project	PROJECT UNDER IMPLEMENTATION, PLANNED COMPLETION - JUNE 2006

Source: MoE SR

- **TRANSITION FACILITY (2004-2006)**

Transition Facility (2004-2006) is designed for the new EU member states to strengthen and develop their administration capacities to ensure the implementation of the EC legislation in the areas that cannot be funded from structural funds. Drafts of projects must build on the *acquis communautaire* and must not overlap with already existing PHARE projects of EU funding.

Projects implemented under the Unallocated Institutional Building Facility

UIBF 2004/016-764.08.0301-0002: Derivation of typologically-specific reference conditions for the classification of the ecological state of water	
INTERNATIONAL PARTNER	Finland (Finnish Environmental Institute)
Total financial volume	200 000 EUR
State of project	PROJECT UNDER IMPLEMENTATION, PLANNED COMPLETION - JUNE 2006
UIBF 2004/016-764.08.0301 Ensuring the information flow on the quality of lake and dam water in the SR in relation to the EEA and EC, and software strengthening of the database system of water designated for recreational use	
INTERNATIONAL PARTNER	(project to be implemented)
Total financial volume	199 000 EUR
State of project	project to be implemented

Source: MoE SR

Life III – financial instrument for environment

The LIFE Programme focuses on development and implementation of the strategy for the EC environmental protection. Its main objective is to help integrate the environmental aspect into the social area. Activities are funded in three basic areas: LIFE – Nature, LIFE – Environment, LIFE – Third countries.

The Programme is unique in that it does not limit the number of applicants for funding. Any subject, including government institutions and entrepreneurs, may apply for funding.

Preparation of project proposals for the year 2005 and their subsequent classification into the EC assessment process continued in the second half of 2004. There were four project proposals submitted under the LIFE – Nature Programme, while three project proposals were submitted under the LIFE – Environment Programme.

Summary of approved and ongoing projects under the LIFE EC Programme in 2005

LIFE - Nature

Protection of biodiversity of environment in the Slovenský Raj NP	
Project submitted by:	State Nature Protection of the SR – Administration of the Slovenský raj NP
Project partners:	DAPHNE – Institute of applied ecology, Forest Research Institute, Voluntary Association of the Villages of Slovenský Raj, the village of Hrabušice, Slovak scouting
Project's budget:	639 460 EUR
Grant LIFE:	319 961 EUR
Phase:	under implementation

Protection of the Bustard in Slovakia LIFE05NAT/SK/000115	
Project submitted by:	State Nature Protection of the SR
Project partners:	SOVS, RPS, city of Lehnice, Hunting Association of Lehnice
Project's budget:	2 040 000 EUR
Grant LIFE:	1 500 000 EUR
Phase:	under implementation

Restoration of wetlands in the Záhorská lowland LIFE05NAT/SK/000112	
Project submitted by:	State Nature Protection of the SR
Project partners:	BROZ, Slovak Water Management Company
Project's budget:	624 000 EUR
Grant LIFE:	312 000 EUR
Phase:	under implementation

Restoration of water regime in the nature reserve of Šúrske swamps	
Project submitted by:	AINP – Association of industry and nature protection
Project partners:	village of Svätý Jur, Slovak Water Management Enterprise, Slovak Land Fund, State Nature Protection of the SR – Administration of the Malé Karpaty PLA
Project's budget:	400 000 EUR
Grant LIFE:	300 000 EUR
Phase:	under implementation

Protection of the Imperial Eagle in the Carpathian basin	
Project submitted by:	SVODAS – Group for research and protection of birds of prey and owls
Project partners:	State Nature Protection in cooperation with the MME Bird Life Hungary
Project's budget:	492 000 EUR
Grant LIFE:	369 000 EUR
Phase:	under implementation

Protection and management of the Danube floodplain forests	
Project submitted by:	BROZ – Bratislava regional association of protection
Project partners:	State Nature Protection – PLA Administration of Danube floodplains, Nationalpark Donau-Auen (Austria)
Project's budget:	570 000 EUR
Grant LIFE:	370 500 EUR
Phase:	under implementation

Source: MoE SR

LIFE - Environment

Sustainable development of cities and reduction of climate change impacts on the quality of urban life and urban environment LIFE04ENV/SK/00797	
Project submitted by:	Regional Environmental Centre Slovakia
Project partners:	city of Púchov, OZ Living Planet, Ministry of Environment of the SR
Project's budget:	355 739 EUR
Grant LIFE:	170 945 EUR
Phase:	under implementation

Innovative approach to reduction of waste from the propylene oxide production LIFE04ENV/SK/000796	
Project submitted by:	Novácke Chemical Works, inc.
Project partners:	-
Project's budget:	1 775 842 EUR
Grant LIFE:	281 503 EUR
Phase:	under implementation

Implementation of new approaches to sustainable management of water and landscape of the Hungary-Slovakia territory (Malý žitný ostrov)	
Project submitted by:	Water Management Research Institute
Project partners:	Hungary – Self-governing Association of the Upper Mošon Podunajsko, Geonardo Regional Project-Development Environmental, Spatial-information Centre, s.r.o., Administration of Environment and Water Management of the West Zadunajsko, VITUKI Protection and Water Management Research Institute
Project's budget:	250 158 EUR
Grant LIFE:	123 763 EUR
Phase:	under implementation

Integrate approach to the extraction of energy from biomass	
Project submitted by:	BIOMASA – association of legal persons
Project partners:	UNDP – GEF, MoE SR
Project's budget:	5 733 000 EUR
Grant LIFE:	1 012 000 EUR
Phase:	under implementation

Source: MoE SR

Slovak Official Development Assistance (ODA)

On acceding to the EU, Slovakia obliged itself to create a mechanism of development assistance. Such mechanism is called the Official Development Assistance, or the ODA. The strategic and action documents, directives, budgets, and international treaties are based on the *Medium-term Strategy for Official Development Assistance: 2003-2008,* which defines the ODA objectives, principles, priorities, and partners.

National Programme for the year 2005 focused on that part of the Slovak development aid, where Slovakia was in the position of an active partner to the developing countries.

Development funds from the MFA SR in 2005 were to ensure and implement:

- projects and activities for the high priority project countries – (Afghanistan, Albania, Bosnia and Herzegovina, Kazakhstan, Kenya, Kirghizia, Macedonia, Mongolia, Mozambique, Sudan, Tajikistan, Uzbekistan, and Cambodia),
- projects of development education,
- projects of official aid to Ukraine and Belarus,
- micro grants given through the embassies,
- projects and activities for Serbia and Montenegro.

In 2005, volume of the provided ODA reached **1 739 551 thous. SKK,** which represents the share of 0.12 % of the GDP created in the SR in 2005. Compared to 2004, it is an increase by 825 554 thous. SKK.

In the area of environment, the official development aid focused on multilateral inputs to the international conventions and UN funds, and other multilateral institutions – Environmental Fund UNEP, UN FCCC, CITES, IUCN, Kyoto Protocol, and Zverenec UNEP Fund for the Montreal Protocol on ozone layer depleting substances. In 2005, the volume of inputs from the members reached **3 609 thous. SKK,** which is similar to the previous year.

Summary of approved projects in 2005 in the area of environmental protection

Groundwater management and its trans-boundary aspects in Kazakhstan	
Project submitted by:	Slovak Hydro-meteorological Institute
Project's budget:	110 000 USD
ODA contribution:	100 000 USD
Phase:	under implementation

The group of platinum and mineralization by rare soil elements of the West Mongolia – assessment of regional source	
Project submitted by:	State Geological Institute of Dionýz Štúr
Project's budget:	110 000 USD
ODA contribution:	100 000 USD
Phase:	under implementation

Support of education toward sustainable development in Vojvodina	
Project submitted by:	Slovak Environmental Agency
Project's budget:	2 196 126 SKK
ODA contribution:	1 985 126 SKK
Phase:	under implementation

Source: MoE SR

Summary of other projects of international aid

SCHEME/DONOR:	2002	2003	2004	2005	Beneficiary/ co-author	Note:
5. framework EC programme						
Consortium Operational Management Platform River Information Services - COMPRIS	1.37 (0.036 M€)				AW - Holland SWME, s.e.	Research
5. framework EC programme – total				***1.37 (0.036 M€)***		
6. framework EC programme						
Network of reference laboratories for monitoring and bio monitoring of pollutants - NORMAN			0.63 (0,016 M€)		WRI INEIR - France	Project approved - 2004 Implementation started in - 2005
Tuning of the EIA – IPM3 Process			1.78 (0.044 M€)		SEA Austria, Portugal, , Sweden, Great Britain	Implementation December 2004 - March 2006
Integrated modelling Aqua - Terra			1.04 (0.026 M€)		WRI	44 EU organisations participate in the project
Relationships between ecological and chemical state of the surface water REBECCA		2.48 (0.064 M€)			SHMI SYKE – Finland - coordinator	International project with 14 European countries participating - funds for the SHMI
6. framework programme – total				***5.93 (0.15 M€)***		
Bilateral aid						
Belgium – Flanders						
Air quality in the SR – Monitoring of air pollution and audit of the system of quality			6.6 (0.16M€)		SHMI VMM, Vito (Flanders)	Implementation January 2003 – June 2005

SCHEME/DONOR:	2002	2003	2004	2005	Beneficiary/ co-author	Note:
Capacity building and training of project managers for sustainable ecological tourism				2,59 (0,065 M€)	SBM International Forum for Biophilosophy	Implementation October 2004 – June 2006
Flanders – subtotal				***9.19 (0.23 M€)***		
Denmark DEPA DANCEE						
Flood management in the SR and Ukraine	23.7 (0.59 M€)				MoE SR (WRI, SHMI, SWME), DHI Water and Environment, Hungary, Ukraine, Czech Republic	Implementation March 2001-2006
Aid to Slovak Republic in the implementation of the EU Directive on IPPC	31.9 (0.80 M€)				MoE SR	Planned implementation November 2002 – February 2005
Programme of waste management for hazardous waste		21.8 (0.55 M€)			MoE SR Carl Bro, Ecoas, Ekoconsult Chemcontrol DK	Implementation January 2003 – December 2005
Denmark – subtotal				***77.40 (1.94 M€)***		
Holland Programme Matra, PSO pre-accession–long-term						
Implementation of the Directive 96/82/EC (Seveso II) on industrial safety		13.28 (0.32 M€)			SEA, IVASO, DHV, Envi Consulting NL	Approved – 2002, Implementation 2003-2005
Packaging and waste from packaging in Slovakia		15.68 (0.38 M€)			MoE SR SEA (COHEM), DHV, REP Prešov, Solid Waste Cons.,	Approved – 2002, Implementation 2003 - 2005
Introduction of the Framework Directive on water toward the integrated water management in the Hron River catchment		13.26 (0.34 M€)			MoE SR SWME , SHMI, WRI, Ameco NL	Approved in 2003 Implementation March 2005 – October 206
Assessment of groundwater under the Framework Directive on water 2000/60/EC		11.54 (0.28 M€)			MoE SR, SHMI, SGI , WRI, Water sources of the SR, Royal Haskoning NL	Approved – 2003, Implementation 2004 - 2005
Institutional support of the Slovak pesticide programme		15.35 (0.37 M€)			MoE SR, WRI, SHMI TNO-MEP NL	Approved – 2003, Implementation 2004 - 2005
Improvement to monitoring of certain air pollutants in the SR		14,53 (0.35 M€)			MoE SR, SHMI, SMI, TNO-MEP NL	Approved – 2003, Implementation 2004 - 2005

SCHEME/DONOR:	2002	2003	2004	2005	Beneficiary/ co-author	Note:
PROGRAMMES OF PPA SHORT, PCB, MATRA-FLEX A PSO – SHORT-TERM						
Training of the SEA workers – envir. estimate and risk assessment of the chem. substances and biocides …				N	SEA COHEM Holland, RIVM	Implementation August –December 2005
Creation of capacities within the State Nature Protection in the SR				1.29 (0.034 (0,034 M€)	NP Veľká Fatra Holland, RWS-RIZA	Implementation July - December 2005
GIS maps for the presentation of pressures and impacts				N	SWME, Holland, Delf Hydraulics	Implementation April-December 2005
Other Programmes						
Creation of the stable and free bison population in Slovakia		1.32 (0.033 M€)			NNP SR Holland-LHF	Intern. partner – Polish Academy of Sciences
Implementation of the Framework Water Management EU Directive in the Slovak water management arena				3.51 (0.090 M€)	SWME, Holland, Water Board Vallei en Eem, Leufden	Implementation June-December 2005
Matra Programme – Adept – training courses						
ISPA / KF environment		N	N	N	MoE SR	3+4+3 participants
How to act in Brussels			N	N	SEA, MoE SR	1+1 participant
Communication with the public				N	MoE SR	1 participant
Structural funds				N	MoE SR	1 participant
Holland – subtotal				***89.76 (2.20 M€)***		
Germany						
Assessment of the biotope situation – in order to develop care programmes in 10 regions of *NATURA 2000*			1.58 (0.042 M€)		NNP SR Ministry of Environment of the Federal Republic of Germany	Implementation December 2004 – November 2005
Revitalisation of rivers in the district of Revúca			1.14 (0.030 M€)		NNP SR NP administration, Muránska plane Ministry of Environment of the Federal Republic of Germany	Implementation June 2004 – June 2006
Germany – subtotal				***2.72 (0,072 M€)***		
Switzerland						
Projects of hospital waste incineration in Trnava and Čadca hospitals		90.09 (2.25 M€)			MoE SR, MoH SR, Energoprojekt Ltd., Ernst Basler	Implementation of the Čadca incineration facility – since 2004 + draft of agreement for Trnava since 2005
International framework agreement of 1993 – subtotal					***90.09 (2.25 M€)***	
Flood Protection Programme in Slovakia						

SCHEME/DONOR:	2002	2003	2004	2005	Beneficiary/ co-author	Note:
Vyšný Tvarožec – polder on the Sveržovka brook			14.30 M€)		SWME, s.e. Village of V. Tvarožec	Implementation June 2004 – June 2005
Frička – polder on the Kamenec brook			10.87 (0,25M€)		SWME, s.e. Village of Frička	Implementation June 2004 – June 2005
Flood Prevention Programme in Slovakia – subtotal					***25.17 (0.57M€)***	
SLOVAK-SWISS REVOLVING FUND						
Preparation of the management plan for the Slovak side of the Morava river (tri-lateral Ramsar site) – recovery of abandoned grasslands	0.83 (0.02M €)				National Nature Protection of the SR – Administration of the Záhorie PLA	Implementation June 2002 – December 2005
Information environmental system and environmental awareness	3.84 (0.1 M€)				SEA CEI	Approved in 2002, implementation April 2003-December 2005
Slovak-Swiss Revolving Fund – subtotal					***4.67 (0.12 M€)***	
Switzerland – total					***119.93 (2.94 M€)***	
Great Britain (GB)						
Environmental education made available for the handicapped			0.97 (0.02M€)		SEA Field Studies Council, GB	Multilateral project GB, SR, Italy, Latvia, Bulgaria, and Poland
Great Britain – total					***0.97 (0.024M€)***	
Bilateral programmes – total					***299.97 (7.410M€)***	

Source: MoE SR

Notes:

- Numbers show total value of international aid in mil. SKK, unless otherwise stated.
- Funds were calculated on the basis of the relevant NBS (National Bank of Slovakia) exchange rates – they are only informative.
- N – value of financial aid was not identified, expenses are not possible to calculate (participation in seminars and workshops of experts, etc.)
- Dark areas show the period of project's implementation
- Information on the amount of funding may be found under specific year of approval.

ALPHABETICAL LIST OF ABBREVIATIONS

(N)NM	(National) Nature Monument
(N)NR	(National) Nature Reserve
(p)SCI	(proposed) Sites of Community Importance
(p)SPA	(proposed) Special Protected Area
ADA	Air-quality Deterioration
ADI	Acceptable Daily Income
AL	Arable Land
ALR	Agricultural Land Resources
AOT40	Accumulated Dose Over a Threshold of 40 ppb
ASR	Army of Slovak Republic
BOD	Biochemical Oxygen Demand
CCTIA	Central Controling and Testing Institute in Agriculture
CEDS	Catalogue of the Environmental Data Sources
CITES	Convention on International Trade in Endangered Species of Wild Flora and Fauna
CLC	Corine Land Cover
CM	Cultural Monument
CMS	Consumption Monitoring System
COD	Chemical Oxygen Demand
COD_{Cr}	Chemical Oxygen Demand by Bichromade
COD_{Mn}	Chemical Oxygen Demand by Permanganate
Coll.	Collection of Laws
CPM	Co-ordinated Purpose-oriented Monitoring
CR	Critically Endangered Taxon
CSD	Commission on Sustainable Development
CSDS	Conception of Spatial Development of Slovakia
ct	Carat
dB	Decibel
DD	Data Deficient Taxon
DIS	Departmental Information System
DNFM RAW	Decommissioning of Nuclear Facilities and Management of RAW and Spent Fuel
EC	European Commission, European Comittee
Ed	Endemic Taxon
EEA	European Environmental Agency
EEC	European Economic Community
EHIS	Environmental Health Information Service
EIA	Environmental Impact Assessment
EIONET	European Environment Information and Observation Network
EMAS	Eco-Management and Audit Scheme
EMEP	European Monitoring and Evaluation Programme
EMS	Environmental Management System
EN	Endangered Taxon
EU	European Union
EX	Extinct Taxon
FCC	Fibre-Concrete Container
FoRI	Food Research Institute
FRI	Forest Research Institute
GDP	Gross Domestic Product
Gg	Greenhouse Gases
GIS	Geographical Information System
GS SR	Geological Survey of the Slovak Republic
GWh	Giga Watt hour
ha	Hectare
HSS	Historical Settlement Structures

HW	Hazardous Waste
IBA	Importance Birds Areas
ICP Forest	The International Co-operative Programme on Assessment and Monitoring of Air Pollution Effects on Forests operating under UNECE (United Nations Economic Commission for Europe)
IEA	International Energy Agency
IGCC SR	Institute of Geodesy, Cartography and the Cadastre of the Slovak Republic
IIS	Internal Information System of the MoE SR
Inc.	Incorporated
INES	International Nuclear Event Scale
IPPC	Integrated Prevention and Pollution Control
IRP	Integrated Register of Pollution
IS	Insoluble Substances
ISE	Information System of the Environment
ISEB	Information System of Environmental Branches
ISFS	Interim Spent Fuel Storage Facility
ISM	Information System of Monitoring
ISO	International Organization for Standardization
IST	Information System of the Territory
IUCN	The International Union for the Conservation of Nature and Natural Resources
kt	Kilotonnes
LAN	Local Area Network
LR	Lower Risk Taxon
Ltd.	Limited corporation
MB SR	The Monuments Board of the Slovak Republic
MDA	Minimum Detectable Activity
MGF	Monitoring of Game and Fish
MMO SR	Main Mining Office of the Slovak Republic
MoA SR	Ministry of Agriculture of the Slovak Republic
MoC SR	Ministry of Culture of the Slovak Republic
MoCRD SR	Ministry of Construction and Regional Development of the Slovak Republic
MoD SR	Ministry of Defence of the Slovak Republic
MoE SR	Ministry of Environment of the Slovak Republic
MoEC SR	Ministry of Economy of the Slovak Republic
MoED SR	Ministry of Education of the Slovak Republic
MoF SR	Ministry of Finance of the Slovak Republic
MoFA SR	Ministry of Foreign Affairs of the Slovak Republic
MoH SR	Ministry of Health of the Slovak Republic
MoI SR	Ministry of Interior of the Slovak Republic
MoJ SR	Ministry of Justice of the Slovak Republic
MoLSAF SR	Ministry of Labour, Social Affairs and Family of the Slovak Republic
MoTPT SR	Ministry of Transport, Posts and Telecommunications of the Slovak Republic
MR	Monument Reserve
MS	Mining Space
MW	Municipal Waste, MegaWatt
MZ	Monument Zone
NATO	North Atlantic Treaty Organisation
NC SR	National Council of the Slovak Republic
NE	Not Evaluated Taxon
NEIS	National Emission Inventory System
NEL	Non -polar Extractable Substances
NHI	The National Health Institution
NIW	The National Inspectorate of Work
NM VOC	Non-Methane Volatile Organic Compounds
NNSS RAW	National Near Surface Storage of RAW
No.	Number

NP	National Park
NPP	Nuclear Power Plants
NPPRI	Nuclear Power Plant Research Institute
NRA	Nuclear Regulatory Authority
NUTS	Nomenclature of Units for Territorial Statistics
OCP	Office of Civil Protection
OECD	Organisation for Economic Co-operation and Development
PA	Protected Area
PAH	Polyaromatic Hydrocarbons
PCB	Polychloride Biphenyl
PCMI	Preventive and Clinical Medicine Institute
pcs	Pieces
PCT	Polychlorinated Terphenyls
PDA	Protected Deposit Area
PES	Primary Energy Sources
PFPRS MoI SR	Presidium of Fire Protection and Rescue Service of Ministry of Interior of the SR
PG	Permanent Grassland
pH	Acidity in pH
PLA	Protected Landscape Area
PM_{10}	Particulate Matter between 2.5 and 10 micrometers in size
PMS	Partial Monitoring System
PMS-S	Partial Monitoring System - Soil
POPs	Persistent Organic Pollutants
ppb	Parts per Billion
PS	Protected Site
PTWI	Permissible Tolerated Weekly Income
PZ	Protective Zone
RAS	Roasted Substances
RAW	Radioactive Waste
RIAP	Research Institute for Animal Production
RIPP	Research Institute of Plant Production
SB	State Budget
SCA	Slovak Caves Administration
SEA	Slovak Environmental Agency
SEI	Slovak Environmental Ispection
SHI SR	State Health Institute of the Slovak Republic
SHMI	Slovak Hydrometeorological Institute
SKK	Slovak crowns
SMM	Slovak Mining Museum
SMNPaS	The Slovak Museum of Nature Protection and Speleology
SNC SR	State Nature Conservancy of the Slovak Republic
SO SR	Statistical Office of the Slovak Republic
SPD	Spatial Planning Documentation
SPM	Spatial Planning Material
SPM	Suspended Particulate Mater
SR	Slovak Republic
SS	Soluble Substances
SSCRI	Soil Science and Conservation Research Institute
SSGE	Slovak State Gas Enterprise state company
SSPA	Small-size Protected Areas
STN	Slovak Technical Standard
SVFA SR	State Veterinary and Food Administration of the Slovak Republic
TANAP	Tatras National Park
TJ	Tera Joule
UNEP	United Nations Environment Programme
UNESCO-MaB	The United Nations Educational, Scientific and Cultural Organization – Man and the Biosphere

UNO	United Nations Organization
V4	Visegrad group (4 Central European contries: Czech Rep., Slovakia, Hungary, Poland)
VaK	State Enterprises Water and Sewage Works
VRP	Village Renewal Program
VU	Vulnerable Taxon
WC	Western Carpathian
WCH	World Culture Heritage
WDS	Water Deteriorative Substances
WEI	Water Exploitation Index
WHO	World Health Organization
WQEDA	Water Quality Endangerment and Deterioration Accidents
WRI	Water Research Institue
WWTP	Waste Water Treatment Plants

STATE REGISTRATION NUMBER OF THE DISTRICTS IN THE SR

Bratislava region	
Bratislava I.-V	BA,BL
Malacky	MA
Pezinok	PK
Senec	SC
Trnava region	
Trnava	TT,TA
Dunajská Streda	DS
Galanta	GA
Hlohovec	HC
Piešťany	PN
Senica	SE
Skalica	SI
Trenčín region	
Trenčín	TN,TC
Bánovce nad Bebravou	BN
Ilava	IL
Myjava	MY
Nové Mesto nad Váhom	NM
Partizánske	PE
Považská Bystrica	PB
Prievidza	PD
Púchov	PU
Nitra region	
Nitra	NR,NI
Komárno	KO
Levice	LV
Nové Zámky	NZ
Šaľa	SA
Topoľčany	TO
Zlaté Moravce	ZM
Žilina region	
Žilina	ZA,ZI
Bytča	BY
Čadča	CA
Dolný Kubín	DK
Kysucké Nové Mesto	KM
Liptovský Mikuláš	LM
Martin	MT
Námestovo	NO
Ružomberok	RK
Turčianske Teplice	TR
Tvrdošín	TS
Banská Bystrica region	
Banská Bystrica	BB,BC
Banská Štiavnica	BS
Brezno	BR
Lučenec	LC
Detva	DT
Krupina	KA
Poltár	PT
Revúca	RA
Rimavská Sobota	RS
Veľký Krtíš	VK
Zvolen	ZV
Žarnovica	ZC
Žiar nad Hronom	ZH
Prešov region	
Prešov	PO,PV
Bardejov	BJ
Humenné	HE
Kežmarok	KK
Levoča	LE
Medzilaborce	ML
Poprad	PP
Sabinov	SB
Snina	SV
Stará Ľubovňa	SL
Stropkov	SP
Svidník	SK
Vranov nad Topľou	VT
Košice region	
Košice I.až IV	KE,KI
Košice okolie	KS
Gelnica	GL
Michalovce	MI
Rožňava	RV
Sobrance	SO
Spiš ká Nová Ves	SN
Trebišov	TV