MINISTRY OF THE ENVIRONMENT OF THE SLOVAK REPUBLIC

STATE OF THE ENVIRONMENT REPORT

SLOVAK REPUBLIC 2006

FOREWORD

Basic rights of each individual living in the Slovak Republic include the **right to a favourable environment.**

The Slovak Government in its **programme declaration** considers environmental care and protection to be a decisive instrument in securing the sustainable development based on the integration of three interdependent equal pillars - economic, social, and environmental, in line with the European environmental legislation and international agreements.

This **State of the Environment Report in the Slovak Republic in 2006** document lends itself to the primary goal of environmental assessment in Slovakia in 2006. The Report also focuses on assessing long-range development trends, identifying the causes leading to the present situation, quantifying their impact, as well as on monitoring the state of environment and international cooperation. The document presents before the public, both professional and lay, available **information on the environment** in line with the provisions of **Act 17/1992 Coll. on the environment**, and **Act 205/2004 Coll. on gathering, storing, and spreading of environment-related information.**

Over the last decade of the 20th century, Slovakia experienced **critical changes** in the society, major restructurization to its economy, adoption and implementation of new legislation and strategic documents focusing on environmental protection. All this resulted in a significant improvement in environmental indicators. Current potential for radical improvements in the area of environment has been reached. Maintaining the achieved level and carrying on with potential improvements calls for a consistent adoption of legislation, implementation of other forms of environmental protection, as well as sufficient funding. Therefore, from the perspective of long-term environmental assessment, the changes are no longer so dramatic as those taking place in the **last** years of the 20th century. More significant future development may be the result of intensive building of environmental infrastructure.

Positive outcomes resulting from the trend in environment include a permanent, slight reduction in emissions of basic pollutants with the exception of particulate matter emissions. The latter was increased,

same as last year, due to an increased consumption of wood for household heating. Over the recent years; however, changes to total emissions have been minimal. Limit values for human health protection for the following pollutants – sulphur dioxide, carbon monoxide were not exceeded beyond the limit defined by current legislation. Also, the level of benzene at all monitoring stations stayed below the limit value. Target value for heavy metals was exceeded only at one station.

There has been a continuing trend in reduction of aggregated anthropogenic emissions of green house gasses. However; just like in case of particulate matter emissions, these changes in total volumes have not been significant since 2000.

Trend in the Slovak economy related to the environment has continued to show a reduction in energy demands, calculated per unit of gross domestic product. Electricity production from renewable energy resources has been on the rise. Compared to 2004, there was an increase in 2005 by 0.5 %, reaching 4.4 % of total gross domestic energy consumption.

There is also a permanent growth in the population supplied with drinking water from public water supply, as well as a growing connectedness to sewerage systems and WWTPs. As an EU member country, Slovakia has the obligation to install municipal sewerage systems and waste water treatment plants. We consider this to be one of the most challenging commitments in the area of environmental protection. There is a positive trend in the volumes of discharged waste water and its contamination, resulting in a slight improvement to selected surface water quality indicators.

The biggest **problem** in the area of air pollution is particulte matter PM_{10} pollution, which significantly exceeds the limits of air pollution generally valid as of January 2005. Adverse situation has remained in ground ozone air pollution with exceeded limit values for human health protection and vegetation. This problem; however, is a typical example of the fact that environmental protection cannot become the prerogative of only some countries. Rather; it calls for a focused, international initiative and coordinated steps. Ground ozone in the SR territory shows mainly trans-boundary character. Significant reduction in national emissions of ozone precursors over the last 15 years did not bring reduction in detected ground ozone concentrations. Outcomes of model calculations point to a very small contribution of Slovakia to the middle-European level of ground ozone concentrations. Reaching the target concentration values in 2010, as set forth by the EU legislation, is not possible today, given the existing national measures.

Endangerment of flora and fauna is still a direct reflection of environmental conditions. For example, there are 100 % taxonomic units of amphibians, 92 % taxonomic units of reptiles, and 76 % taxonomic units of mammals known in the Slovak Republic classified under the IUCN endangerment category.

We identified adverse phenomena also in a number of waste management indicators. Compared to 2005, there was about 33 % increase in waste volumes located on the market. When calculated per capita and compared to equal time periods, there was an increase in municipal waste production by 12 kg.

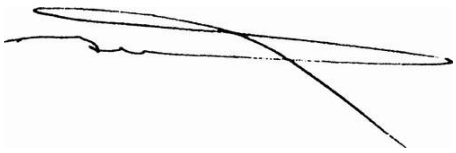
Environmentally inappropriate road passenger and cargo transport still shows a decisive impact. Notwithstanding a slight growth of passenger and cargo railway transport, percentage of carried

passengers is still only about 12 % of all passengers transported by road transport.

The mentioned examples only illustrate the changing nature of the environmental situation in Slovakia. For more detailed information, please go to individual chapters of this document. Demanding environmental obligations posed to Slovakia as an EU member, together with an attempt to create and preserve healthy living conditions for the population, will require a coordinated effort from all affected groups of the society and the general public. There must be a committed attempt to implement the set priorities for environmental protection as reflected in the draft of the Operation programme. The Programme will make it possible to apply for EU funding in the area of environmental protection by 2013.

Besides coercive instruments, it is also the application of voluntary instruments including cleaner production, EMAS, or environmental assessment and product labeling that play a big role in environmental protection. Implementation of these instruments goes hand in hand with environmental promotion and education with the goal to raise public environmental awareness and public involvement on decision making in the area of environmental protection.

Environmental awareness is to be raised also through **regular information on the state of environment,** which forms the basis for political decisions to achieve the objectives of the National strategy for sustainable development, control and evaluation of outcomes of the national environmental policy and sectoral integration strategies. State of the Environment Report in the Slovak Republic in 2006 is only one of the forms of publishing this type of information. The Report informs the general public of the environmental situation in Slovakia and also makes comparisons to other EU member states.



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

COMPLEX ENVIRONMENTAL MONITORING AND INFORMATION SYSTEM

• 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.enviroportal.sk/ism) 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 Environmental Agency Banská Bystrica	Waste generation and disposal in Slovak Republic Waste reclamation facilities	Waste reclamation facilities Interstate transport of hazardous waste
Biota	MoE SR	SR State Nature Conservancy 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	Food Research Institute 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	2006
Air quality	28 651	27 600	18 400	16 900	28 971
Meteorology and climatology	28 300	33 200	35 000	26 031	76 013
Water	44 434	35 330	24 192	43 717	44 447
Radioactivity	2 668	1 792	1 454	1 500	2 545
Waste	3 500	3 500	3 500	3 800	1 040
Biota	600	169	600	1 000	1 000
Geological factors	10 000	10 000	10 000	10 000	10 000
Soil	9 200	9 200	9 200	9 600	9 100
Forests	1 720	2 900	2 900	4 400	8 000
Xenobiotic substances	27 032	28 400	27 381	12 454,2	15 301
Total costs	**156 105**	**152 091**	**132 627**	**129 402,2**	**196 417 000**
Costs of MoE SR	118 153	111 591	93 146	102 948	164 016

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. For more information on the organisational structure and pertinent responsibilities, see EnviroInfo meta-information system.

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 SR 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.	2006 - Impact assessment of strategic documents
IS of integrated pollution prevention	SEA	After completed, the system will provide information on the status, process, and outcomes of the IPPC permit process, as well as on closely relating activities, including the best available technologies. Creating an IS	first part since 2005

and control (IPPC)		will secure information support for the execution of state administration activities within the specific area. Meanwhile, this will create a mechanism for collecting, assessment, and supply of information to the public. Pursuant to the IPPC law, state administration is carried out by the Ministry of Environment (MoE SR) and the Slovak Environmental Inspection. (SEI).	
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	SNC SR	Database of taxons and biotopes (since 2002), Database of Waterfalls (since 2004), database of bear	

taxons and biotopes and other nature protection databases		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 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	SGI DS	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. Definite spatial identification (localisation) of elements is one of the basic conditions for mutual communication and interconnectedness of public administration information systems.	

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

♦ **Balance of particulate matter emissions**

Pursuant to Act 478/2002 Coll. on air protection, which amends Act 401/1998 Coll. on fees for air pollution as amended (Air Act) (Sect. 19, par. 2(d) an operator of a **large and medium-sized source** is required to provide to the pertinent local environment protection authority always before February 15 of the current year, a complete and true information on the source, emissions, and keeping of the emission limits and quota for the previous calendar year. Local environmental protection authority will submit these processed electronic data to the authorized MoE SR organization - the SHMI (Slovak Hydrometeorological Institute), which operates the central **National Emission Inventory System (NEIS)**. SHMI processes these data on the national level. In 2001, the SHMI for the first time collected and processed information through the NEIS module, which replaced the previously used REZZO system. **In 2005, this system processed data from 843 large sources and 12 082 medium sources.**

SHMI assesses the volume of polluting compond emissions from the from **small sources** on a yerly basis, based on the volume and quality of sold solid fuels to retailers and households. This information is available from the submitted data to the local environment protection authority by individual sellers, as well as from natural gas consumption by households.

Mobile sources emissions have been monitored since 1990 and are determined on the year-to-year basis. To calculate road transport emissions, the method of Computer Programme to Calculate Emissions from Road Transport (COPERT) is used. The method builds on the number of individual automobile types, volume of travelled kilometres, and consumption of individual fuel types. Besides road transport, calculated are also emissions from the railway, air, and ship transports, all in compliance with the Intergovernmental Panel Climate Change (IPCC) methodology.

- **History of particulate matter emissions and sulphur dioxide emissions**

Emissions of solids and **sulphur dioxide (SO_2)** have shown a steady reduction since 1990, which, apart from reduction in production and energy consumption, has been caused by a change within the fuel group toward more purified fuels, as well as by using fuels with higher quality labels.

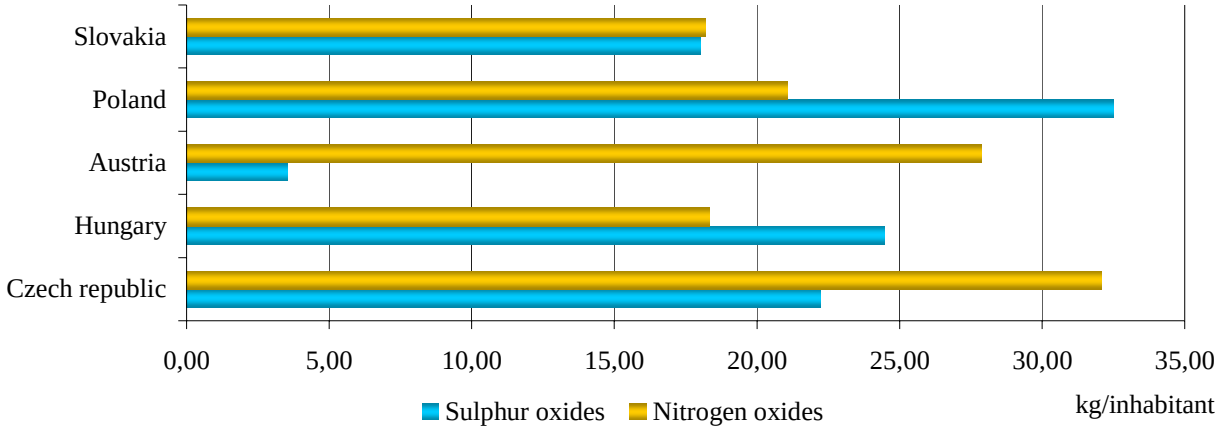
- **Trend in emissions of nitrogen oxides**

Nitrogen emissions (NO_X) have shown a slight reduction since 1990. Slight increase in emissions in 1995 was related to an increased consumption of natural gas. Decrease in nitrogen oxides in 1996 was caused by a change to the emission factor that took into consideration the level of equipment and technology of incineration processes. Reduction in solid fuel consumption since 1997 has led to a further decrease in NO_X emissions. In the years 2002 and 2003, de-nitrification played a significant role in emission reduction (electric power plant Vojany). In the years 2004 and 2005, the emissions trend has marked no major changes.

- **Trend in carbon monoxide emissions**

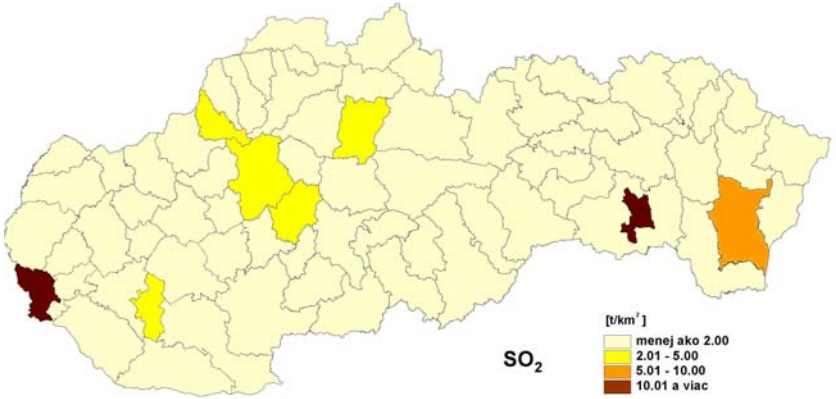
Carbon monoxide emissions (CO) since 1990 have shown a falling tendency, which was caused mainly by reduced consumption and change in fuel composition in the sphere of retail consumers. CO emissions from large sources were decreasing only slightly. The most significant share on CO emissions from large sources comes from iron and steel industries.

Emissions of nitrogen and sulphur oxides (shown as NO_2 and SO_2 equivalents) per capita in Slovakia and neighbouring countries in 2004



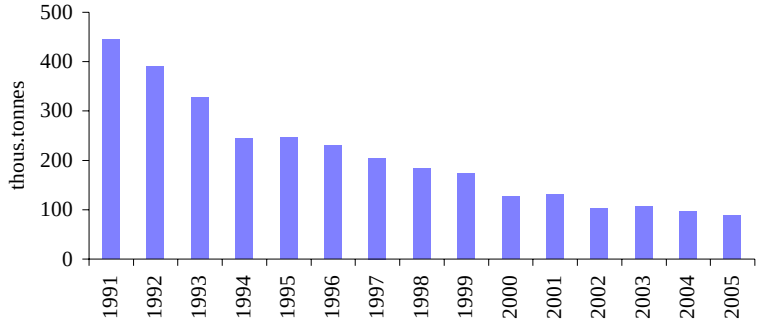
Source: Eurostat

Element regional emission of SO_2 in 2005 ($t.km^{-2}$)



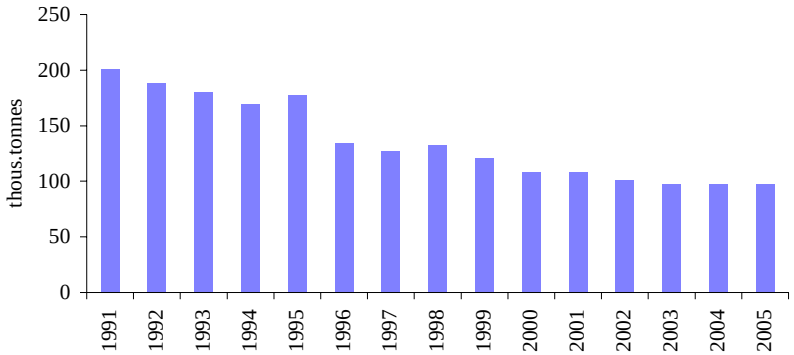
Source: SHMI

Trend in emission of SO_2



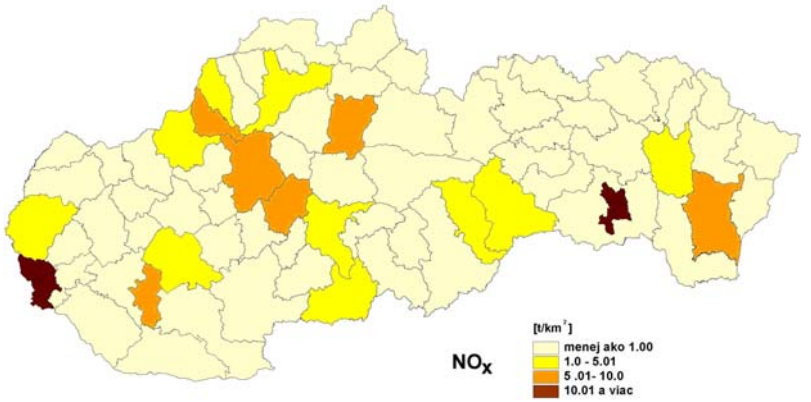
Source: SHMI

Trend in emission of NO_x



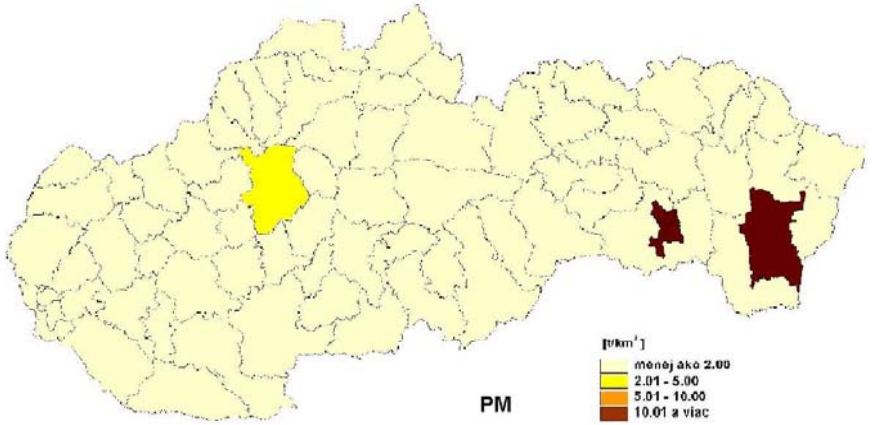
Source: SHMI

Element regional emission of NO_x in 2005 ($t.km^{-2}$)



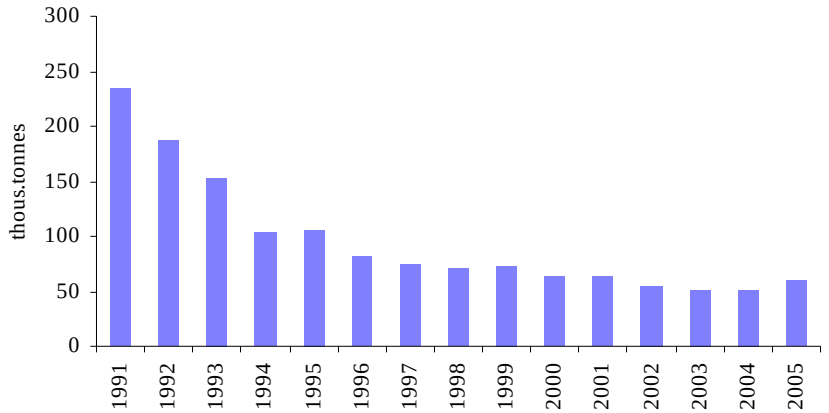
Source: SHMI

Element regional emission of PM in 2005 (t.km^{-2})



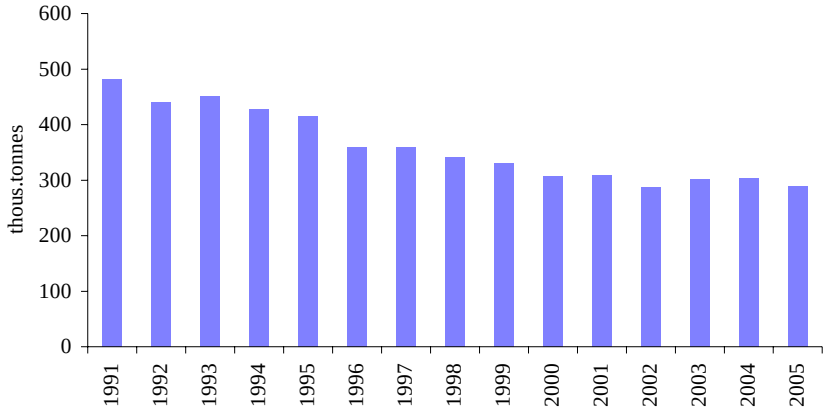
Source: SHMI

Trend in emission of PM



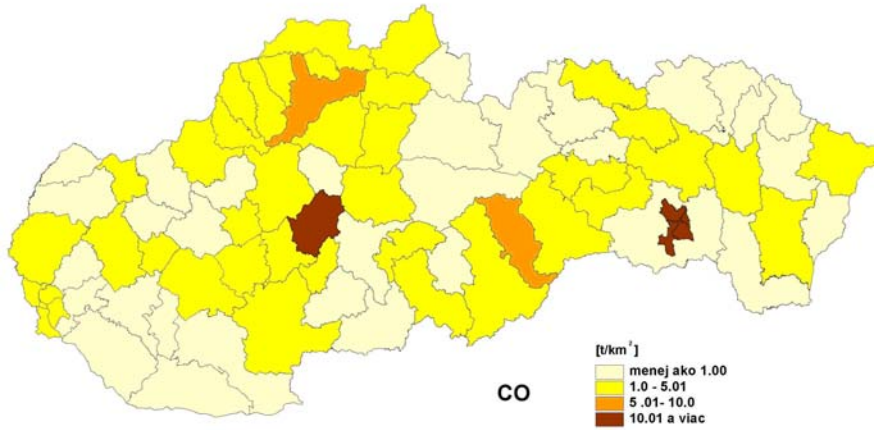
Source: SHMI

Trend in emission of CO



Source: SHMI

Element regional emission of CO in 2005 (t.km^{-2})

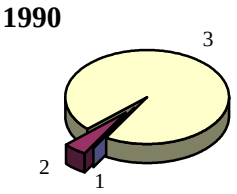


Source: SHMI

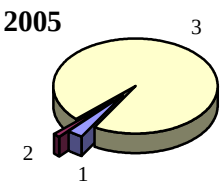
♦ **Balance of ammonia emissions (NH_3)**

NH_3 emissions in 2005 reached 26 926.5 tons. In 1990-2005 ammonia emissions were reduced by 58.5 %. This reduction was caused mainly by changes in agriculture.

The contribution of the particular sectors in NH_3 emission



0.05 %	1. Transport	2.94 %
4.79 %	2. Industry	1.42 %
95.17 %	3 . Agriculture	95.64 %



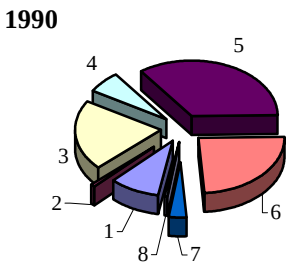
Source: SHMI

Emissions were stated to the date 15.02.2007

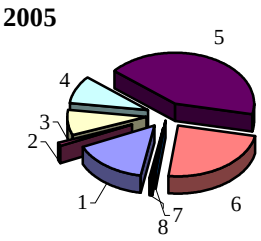
♦ **Emissions of non-methane volatile organic compounds**

NM VOC emissions show a lasting decreasing trend since 1990. In 2005, volume of **NM VOC** emissions reached the value of 78 940 tons, which is a reduction by 42.8 %, compared to 1990.

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



9.4 %	1. Combustion processes	15.3 %
0.8 %	2. Combustion processes in the industry	1.0 %
20.5 %	3. Industrial technologies	8.2 %
6.4 %	4. Mining and distribution of raw materials	9.0 %
34.8 %	5. Using the solvents and other products	42.0 %
24.3 %	6. Transport	23.7 %
3.3 %	7. Waste disposal	0.3 %
0.5 %	8. Agriculture	0.6 %

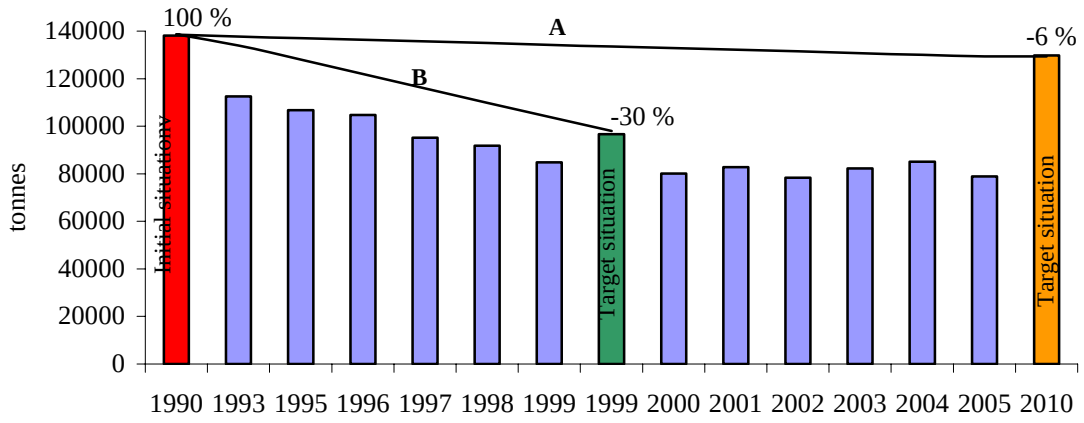


Source: SHMI

Emissions were stated to the date 15.02.2007

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)



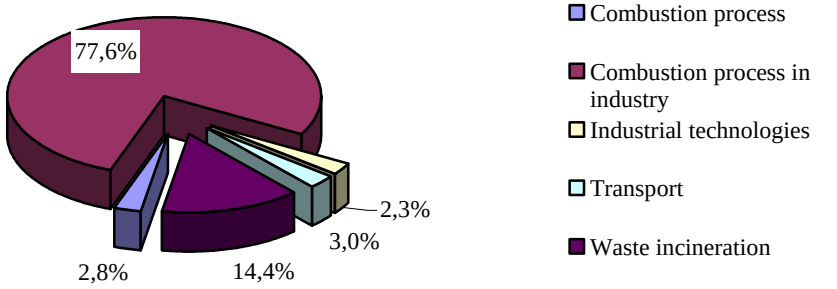
Source: SHMI

A – Reduction aim of the Protocol to abate acidification, eutrophication and tropospheric ozone
B – Reduction aim of the Protocol on limitation of VOC emissions or their Cross-Border Transfers

♦ **Balance of heavy metals emissions**

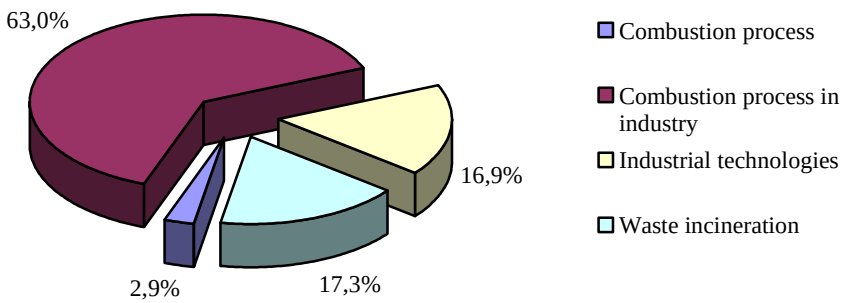
Heavy metal emissions (Pb, As, Cd, Cr, Cu, Hg, Ni, Se, Zn) have been decreasing since 1990. In that year, heavy metal emissions were at the volume of 675.44 tons, while in 2005 it was 242.95 tons, which is a 64 % reduction in comparison to 1990.

The contribution of the particular sectors in the Pb emission production for year 2005



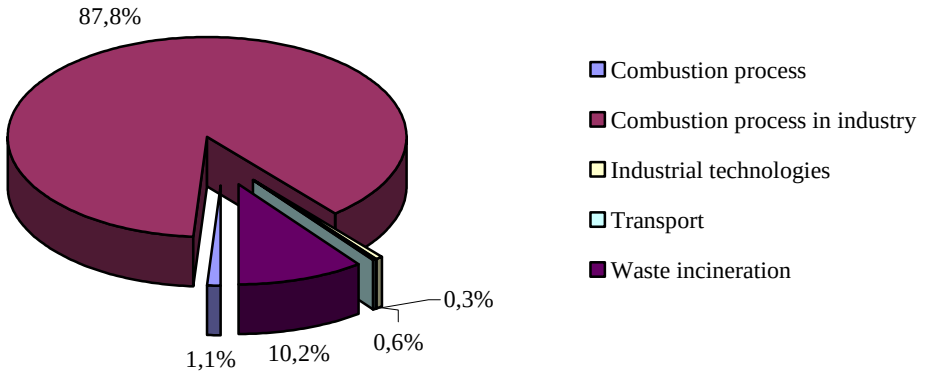
Emissions were stated to the date 15.02.2007 Source: SHMI

The contribution of the particular sectors in the Hg emission production for year 2005



Emissions were stated to the date 15.02.2007 Source: SHMI

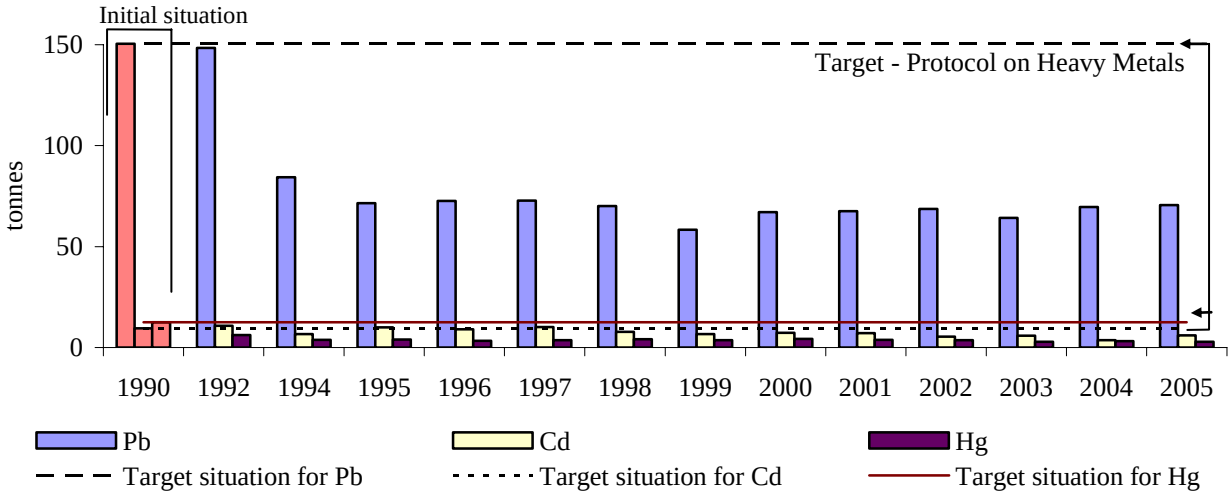
The contribution of the particular sectors in the Cd emission production for year 2005



Emissions were stated to the date 15.02.2007 Source: SHMI

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. SR signed this Protocol in that same year. This goal is still being followed.

Trend in emissions of heavy metals regarding the fulfilmentof the international conventions

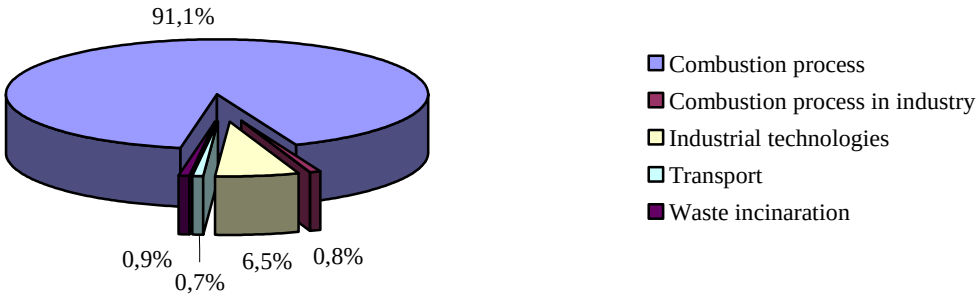


Source: SHMI

♦ **Balance of Persistent organic pollutants (POPs)**

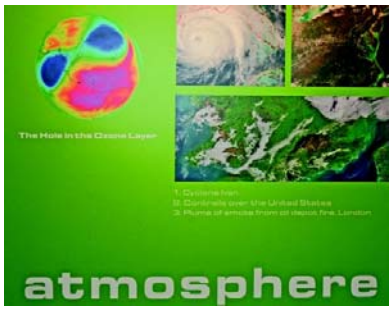
In 1990-2005 **emissions of persistent organic particles** (PCDD/PCDF, PCB, and PAH {B(a)P, B(k)F, B(b)F, I(1,2,3-cd)P}) had a decreasing trend with fluctuating characteristics over the last years. They were most apparent in the emissions of poly-aromatic carbohydrates (PAH).

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

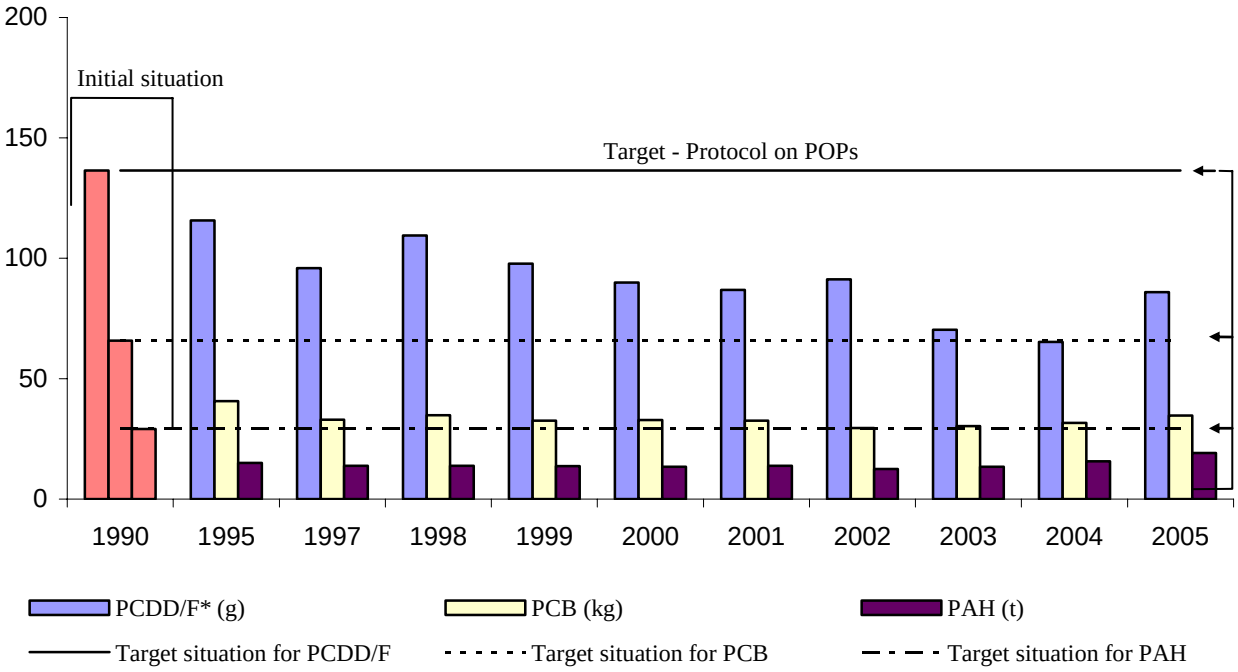


Emissions were stated to the date 15.02.2007 Source: SHMI

In 1998, the Slovak Republic also accessed to **Protocol on Limitation of Persistent Organic Compounds 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.



Trend of POPs emissions regarding the fulfillment of the international conventions



Source: SHMI

Remote transport of air pollutants

In 2005, approximately 38 500 tons of sulphur were imported and 39 000 tons were exported. This meant a continuing trend in significant reduction to total volumes of imported and exported sulphur.

Slovakia has still remained an exporter of oxidized nitrogen. In 2005, 43 400 tons of nitrogen were received; however, 47 600 tons left the country. This also shows a long-term reduction in total volumes.

Volumes of emitted substances from the Slovak territory (t, %)

	Volumes of emitted sulphur		Volumes of emitted nitrogen	
	(t)	(%)	(t)	(%)
1998	74 600	83	53 900	82
2002	42 300	83	46 214	84
2003	45 621	86	47 761	87
2004	41 900	87	46 000	86
2005	39 000	88	47 600	89

Source: SHMI

Volumes of deposited substances on the Slovak territory (t, %)

	Volumes of deposited sulphur		Volumes of deposited nitrogen	
	(t)	(%)	(t)	(%)
1998	75 700	84	48 700	77
2002	53 320	86	46 282	84
2003	52 800	88	45 326	87
2004	45 600	88	49 600	87
2005	38 500	88	43 400	88

Source: SHMI

Volumes of emitted and deposited sulphur and nitrogen as compared in SR and other European countries

Volumes of emitted sulphur from areas Slovakia in 2005 (t, %)

Target country	Volumes of emitted sulphur	
	(t)	(%)
Slovakia	5 500	12
Ukraine	2 800	6
Poland	3 900	9
Hungary	2 800	6
Russia	3 500	8
Romania	2 000	4
Czech republic	3 200	7
Other	20 800	48
Together	**44 500**	**100**

Source: SHMI

Volumes of deposited sulphur from areas Slovakia in 2005 (t, %)

Target country	Volumes of deposited sulphur	
	(t)	(%)
Slovakia	5 500	13
Ukraine	3 900	9
Poland	10 500	24
Hungary	4 900	11
Russia	300	1
Romania	3 600	8
Czech republic	2 000	5
Other	13 300	29
Together	**44 000**	**100**

Source: SHMI

Volumes of emitted nitrogen from areas Slovakia in 2005 (t, %)

Target country	Volumes of emitted nitrogen	
	(t)	(%)
Ukraine	3 100	6
Russia	4 600	9
Poland	4 200	8
Hungary	3 300	6
Romania	2 200	4
Slovakia	5 900	11
Czech republic	3 300	6
Other	26 900	50
Together	**53 500**	**100**

Source: SHMI

Volumes of deposited nitrogen from areas Slovakia in 2005 (t, %)

Target country	Volumes of deposited nitrogen	
	(t)	(%)
Ukraine	4 400	9
Russia	600	1
Poland	7 800	16
Hungary	7 000	14
Romania	3 100	6
Slovakia	5 900	12
Czech republic	2 200	4
Other	18 300	38
Together	**49 300**	**100**

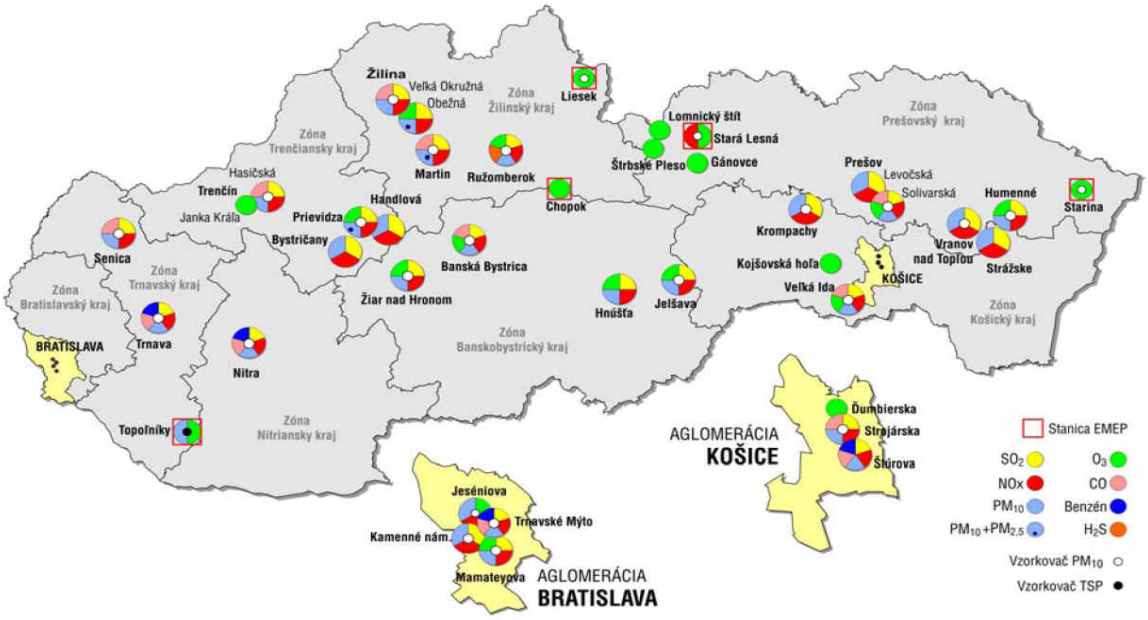
Source: SHMI

Air pollution

- **National monitoring air quality network**

In 2006, the **national air assessment quality monitoring network consisted of 38 automated monitoring stations including 5 stations to monitor regional air pollution and precipitation water chemical composition**. 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.

National monitoring air quality network - owned by SHMI



Source: SHMI

♦ **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 2006, no agglomeration showed exceeded levels of pollution in hourly or daily values beyond the public health limit.

Nitrogen dioxide

Annual limit value for human health protection was exceeded at the following stations: Bratislava – Trnavské mýto, Nitra - Štefánikova, and Trnava - Kollárova. However, no station showed the exceeded limit value increased by tolerance threshold.

PM_{10}

In 2006, PM_{10} particles were monitored at 27 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. The biggest challenge in the area of air protection in Slovakia and most European countries is currently air pollution by marticulate matter (PM_{10}). With the exception of the stations of Bratislava – Jeséniova, Strážske-MIerova, and Humenné-Nám.slobody, the daily limit value was exceeded at all stations, while 8 AMS stations showed also an exceeded annual limit value.

Carbon monoxide

Carbon monoxide pollution level is relatively low and limit value was not exceeded at any monitoring station.

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**

Average annual concentrations of air-borne hazardous compounds - 2006

Station	Prach µg/m³	SO_2-S µg/m³	NO_2-N µg/m³	HNO_3-N µg/m³	SO_4^{2-}-S µg/m³	NO_3^--N µg/m³	O_3 µg/m³	Pb µg/m³	Mn µg/m³	Cu µg/m³	Cd ng/m³	Ni ng/m³	Cr ng/m³	Zn ng/m³	As ng/m³
Chopok	7.0	0.27	0.59	0.02	0.33	0.09	96	2.67	2.66	1.24	0.08	0.60	0.97	6.40	0.22
Topoľníky	24.5	1.34	2.80	0.04	1.37	0.97	60	13.10	6.92	3.59	0.31	2.83	2.94	20.84	1.26
Starina	19.2	1.36	1.24	0.05	1.23	0.38	62	11.18	5.83	1.99	0.31	0.69	0.72	16.32	0.76
St. Lesná	14.9	0.77	1.52	0.05	1.01	0.34	73	9.36	4.76	2.21	0.23	0.51	0.64	16.32	0.67
Liesek	23.4	2.00	1.94	0.06	1.21	0.57	66	14.41	23.08	2.71	0.41	0.85	0.84	26.65	1.71

Source: SHMI

Sulfur dioxide, sulfates

In 2006, regional level of **sulfur dioxide concentrations** varied within the interval of 0.27 µg $S.m^{-3}$ (Chopok) and 2.00 µg $S.m^{-3}$ (Liesek). Stations in lower altitude that include Topoľníky, Starina, and Liesek, showed increased concentration values for sulphur dioxide. The values exceeded 1 µg $S.m^{-3}$. On the other hand, stations situated in higher altitudes, including Stará Lesná, and Chopok, showed values 2-7 times lower.

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.

Regional level of sulphate concentration calculated for sulphur was in 2006 the lowest at Chopok, 0.33 $\mu g.m^{-3}$ and the highest at Topoľníky, 1.37 $\mu g.m^{-3}$. Percentage of sulfates on total mass of atmospheric ozone was 14 - 20 %. Sulfates and sulfur dioxide concentration ratios expressed in sulfur is shown in the interval of 0.61- 1.31, which corresponds to the regional pollution level.

Nitrogen oxides, nitrates

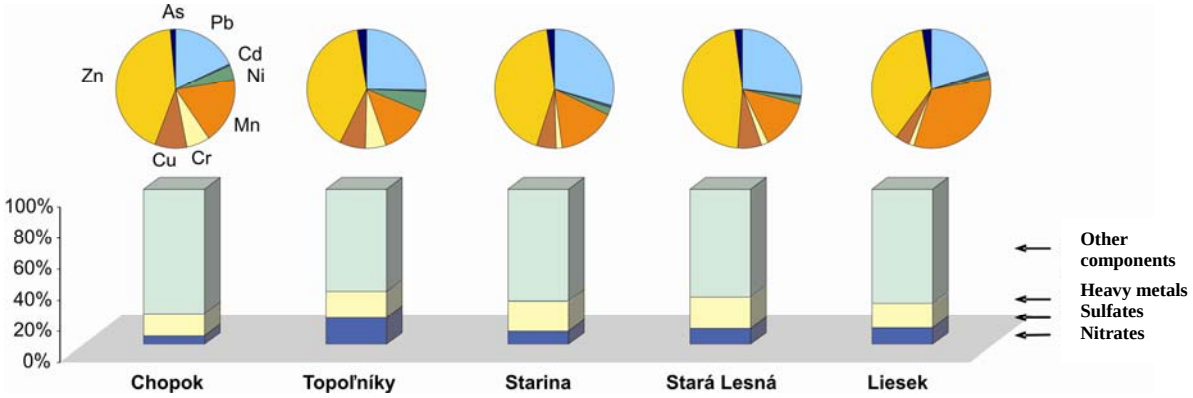
Concentration of nitrogen oxides at regional stations expressed in NO_2-N varied in 2006 between 0.59 $\mu g.m^{-3}$ (Chopok) – 2.80 $\mu g.m^{-3}$ (Topoľníky). In line with Annex 1 of the MoE SR Resolution No. 705/2002 Coll. the **limit value for the protection of ecosystems is 30 µg $N.m^{-3}$** for the calendar year. This value was not exceeded at any regional station. Maximum value of 9.2 µg $NO_x.m^{-3}$ 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 2006. 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 6 % and 17 %. Ratio of total nitrates (HNO_3 + NO_3) to NO_2, as expressed in nitrogen, varied between 0.15 – 0.35.

Atmospheric aerosol, heavy metals

Percentage share of the sum of assessed heavy metals on air-borne dust at regional stations of Slovakia varies between 0.2 and 0.3 %.

Composition of atmospheric aerosol and percentage share of heavy metals in 2006



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. Their concentrations range between individual units to hundreds of units ppb. Ethane presents the worst, next is propane and acetylene. Isoprene releases from ambient forest.

Average annual VOC concentrations in ambient air (ppb) - Starina 2006

ethane	ethene	propane	propene	i-butane	n-butane	acetylene	butane	pentene	i-pentane	n-pentane	isoprene	n-hexane	benzene	toluene	o-xylene
2.034	0.746	0.915	0.119	0.284	0.350	0.879	0.048	0.035	0.270	0.160	0.107	0.085	0.334	0.043	0.247

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.***

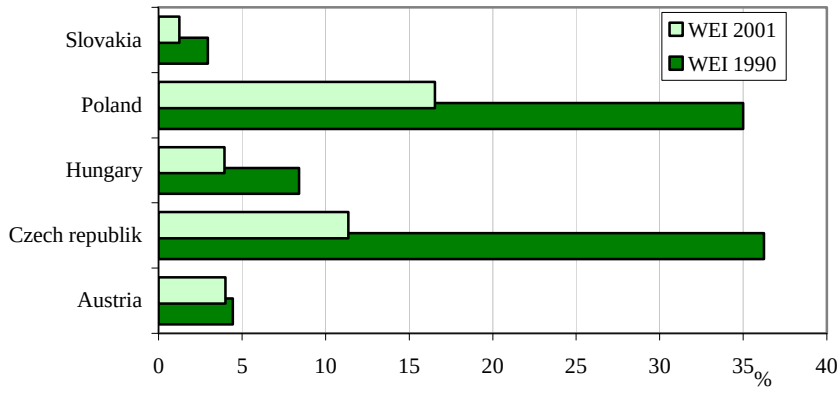
§ 30 par. 1 of the Act No. 364/2004 Coll. on Waters and on Amendment of Act No. 372/1990 Coll. on Offences as amended (Waters Act)

• WATER

Water sources and water fund

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.

Water sources exploitation index



Source: Eurostat

Surface water

♦ Precipitation and runoff conditions

Total **atmospheric precipitations** in the Slovak territory in 2006 reached the value of 740 mm, which represents 97 % of the normal level. In terms of precipitations, this year had been considered normal. Total deficit of precipitations reached the value of -22 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	42	47	64	63	114	18	37	131	17	29	61	17	740
% normal	91	112	136	115	150	137	41	162	27	48	98	32	97,1
Surplus (+)/ Deficit (-)	-4	5	17	8	38	32	-53	50	-46	-32	-1	-36	-22
Character of rainfall period	N	N	V	N	V	V	VS	VV	VS	VS	N	VS	N

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

Source: SHMI

Characteristics of total precipitation figures for most watersheds was normal, with the exception of partial watersheds of Ipeľ, and Slaná with dry precipitation conditions. On the other hand, the Hornád watershed remained humid.

Average rates of precipitation and runoff in particular catchment areas

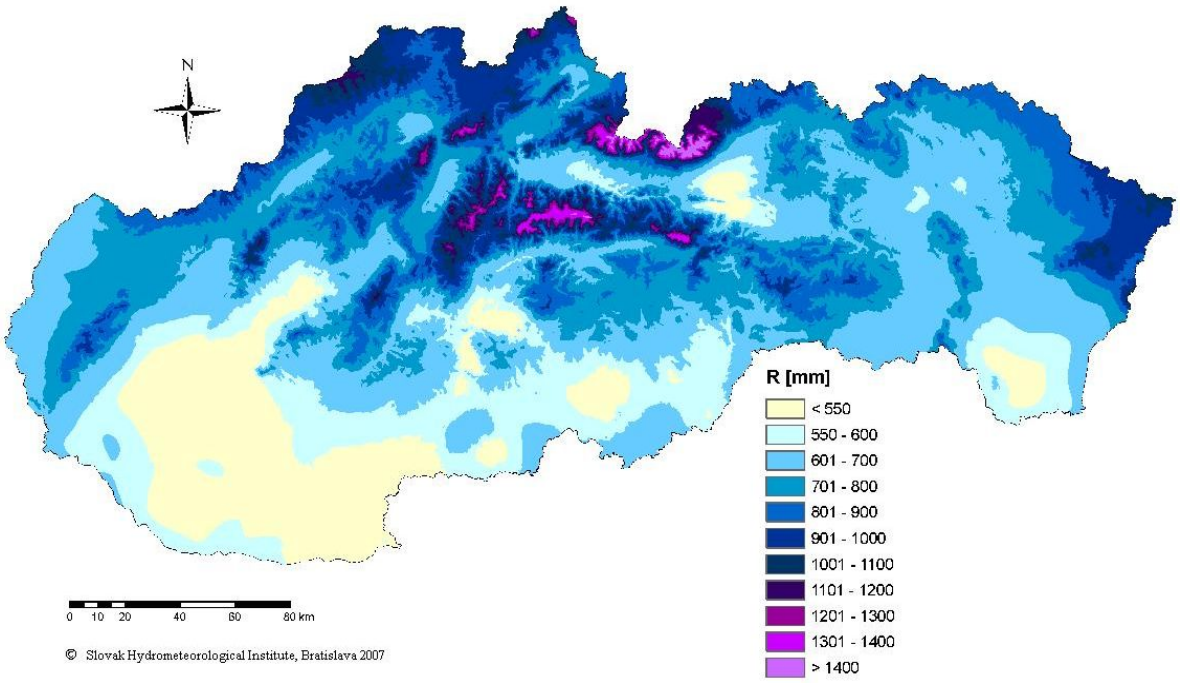
Catchment area	Dunaj		Váh		Hron			Bodrog a Hornád				SR
Subcatchment area	*Morava	*Dunaj	Váh	Nitra	Hron	*Ipeľ	Slaná	Bodva	Hornád	*Bodrog	*Poprad and Dunajec	
Catchment area extent (km^2)	2 282	1 138	14 268	4 501	5 465	3 649	3 217	858	4 414	7 272	1 950	49 014
Average precipitation (mm)	731	574	802	660	727	600	697	729	758	754	887	740
% of normal	107	92	95	95	92	88	88	100	112	107	105	97
Character of rainfall period	N	N	N	N	N	S	S	N	V	N	N	N
Annual runoff (mm)	191	32	348	172	278	159	247	198	277	317	427	304
% of normal	162	89	98	109	87	102	117	94	122	135	115	116

* 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

Annual atmospheric precipitation (mm) in Slovakia in 2006



Source: SHMI

Annual runoff volumes in SR in 2006 reached 116 % of the long-term average value. Runoff volume from partial watershed reached or exceeded 100 % of the long-term average in the Morava, Nitra, Ipeľ, Slaná, Hornád, Bodrog, Poprad, and Dunajec watersheds. The remaining watersheds showed values within 89 – 94 %.

♦ Water balance

In 2006, there was 70 711 mil.m^3 flowing into Slovakia, which is by 905 mil.m^3 more than in the previous year of 2004. **Runoff** from the territory, compared to the previous year, was greater by 5 667 mil.m$^{3.}$

As of 1.1.2005, **total water volume** in water reservoirs was 721.0 mil.m^3, which represented 62 % of total usable water volume in water reservoirs. As of 01.01.06, total available volume of the assessed accumulation tanks compared to the previous year dropped to 682 mil.m^3, which represents 59 % of total exploitable water.

Total hydrological balance of water resources in the SR

	Volume (mil. m^3)		
	2004	**2005**	**2006**
Hydrological balance:			
Rainfall	41 715.00	46 029.00	36 274
Annual inflow to the SR	61 182.00	69 806.00	70 711
Annual runoff	71 279.00	79 979.00	85 646
Annual runoff from the territory of the SR	10 097.00	10 173.00	14 900
Water management balance			
Total abstraction of the surface and ground water in the SR	1 020.00	906.89	882.47
Evaporation from water reservoirs and dams	54.30	5.07	55.79
Discharge into surface waters	955.70	872.00	669.7
Impact of water reservoirs (WR)	355.60	111.61	7.8
	accumulation	**improving**	**improving**
Total volume in WR as of 1st January of the following year	631.80	721.00	681.60
% of supply volume in accumulation WR in the SR	54.00	62.00	59.00
Rate of water exploitation (%)	10.18	8.91	6.38

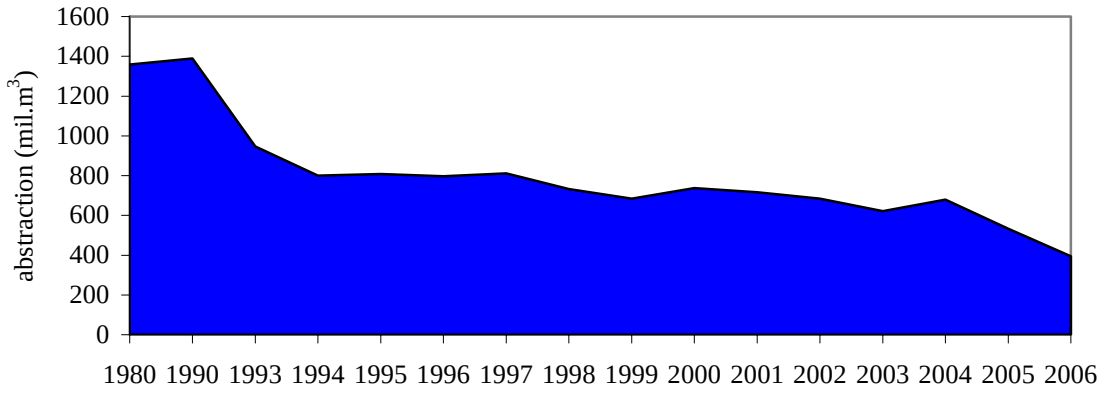
* Note: Data in the table were updated with results from the 2004 assessment Source: SHMI

♦ Surface water abstraction

In 2006 **surface water abstraction** reached the value of 395.142 mil.m^3, which, compared to the previous year, is a reduction by 35 %. Surface water abstraction for industrial purposes in 2006 represented as much as 82 % of total abstraction volume, which, compared to 2005, was a reduction by 144.248 mil.m^3, that is 31 %. A slight increase was recorded also in surface water abstractions for waterlines, which, compared to the previous year, increased by 1.739 mil.m^3, that is by 3.1 %.

These abstractions represented 14 % of total abstractions. Surface water abstractions for irrigation purposes increased, reaching the value of 15.85 mil.m^3 , which was 4 % of all abstractions.

Surface water abstraction between 1980-2006



Source: SHMI

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

Year	Public water-supplies	Industry	Irrigation	Other agriculture	Total	Discharging
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
2006*	55.567	323.709	15.854	0.0120	395.142	748.537

*data from database „Aggregate balance sheet of water“ Source: SHMI

Approximately one third of water in Europe that people abstract is designated for crop irrigation. Another third is used in the cooling blocks of electric power plants. One quarter is used in households as tap water and toilet water. The remaining part, about 13 %, is used up in production. This division by sectors significantly varies within the continent.

- **Surface water quality**

Surface water quality assessment has been carried out on the basis of data obtained during the water level monitoring process. For the year 2006, surface water quality monitoring was split into the basic monitoring, operational monitoring, and monitoring of protected territories (PT). This division followed the provisions of **the MoE SR Resolution no. 221/2005 Coll., which sets forth details on detecting the occurrence and assessment of surface and ground water situation, its monitoring, keeping the water register and water balance records.** Surface water quality was implemented through an approved, reduced version of the Water situation monitoring programme in 2006. The programme was implemented at 397 abstraction sites. This included, within the basic monitoring activity, monitoring of 195 abstraction sites, 39 of them at national border streams. There were 104 sites included within the operational monitoring. Water management streams as part of PT were monitored at 98 sites, including also 8 water dams. Some abstraction sites were monitored for more purposes; hence, the normalised classification of assessed of surface water quality shows 226 abstraction sites.

General evaluation suggests negative surface water classification caused by microbiological indicators of the E group, nutrients (C), and micro pollutants (F), which place water quality into the

III. - IV. categories. For the groups A, B, and D, most abstraction sites are classified under the II. - III. quality categories.

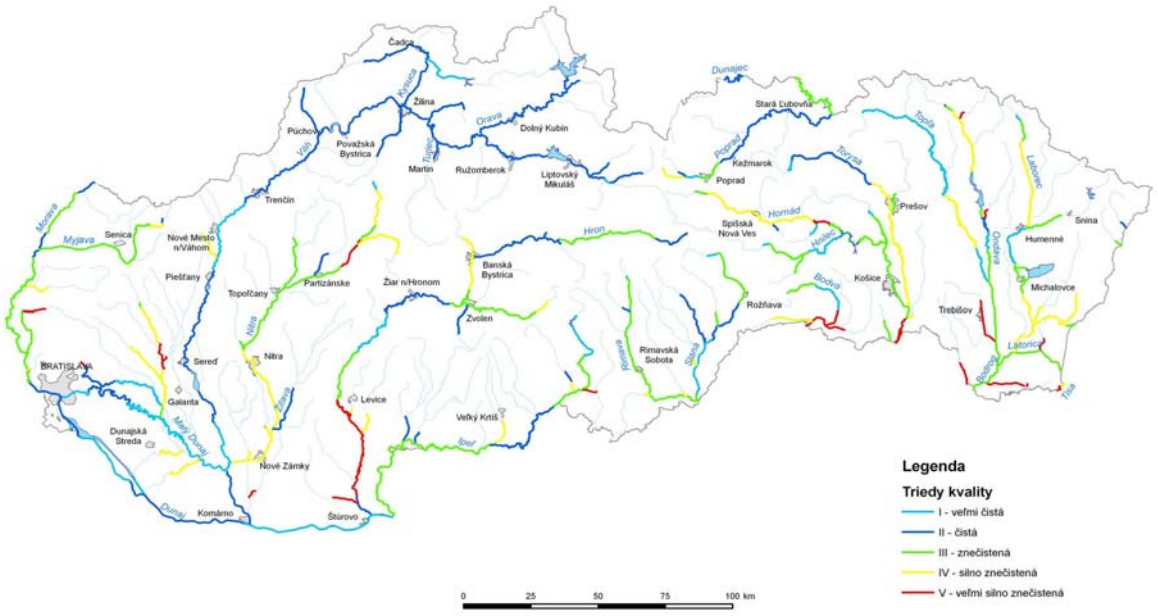
In the years 2005-2006, more than 71 % of the category **A - oxygen demand** (224 abstraction sites) complied with the conditions of the quality groups I, II, and III. Indicator groups **B - basic physical-chemical** (224 abstraction sites), **C – nutrients** (224 abstraction sites), and **D – biological indicators** (193 abstraction sites) stayed at the level of the previous pairs of years and dominate in the II. and III. quality group. There was 84.4 % of abstraction sites that complied with the B indicators group (in 2004-2005 it was 88 % of abstraction sites), while there was 67.9 % of abstraction sites in the C indicators group (in 2004-2005 it was 64 %), and 85.5 % of abstraction sites fell under the D quality group (in 2002-2003 it was 83.14 %). For the assessed pair of years, the number of abstraction sites with acceptable quality category for the indicator E - micro biological indicators decreased to 21.6 % (in 2004-2005 it was 33.14 %), on the other hand, for the F category - micropollutants, the number of abstraction sites grew to 49.5 % (in 2004-2005 it was 46.2 %).

Negative situation still persists in the **E** category - **microbiological indicators** (204 abstraction sites) that falls under the IV. and V. quality categories, with 78.4 % of abstraction sites (in 2002-2003 it was 66.86 %).

Water quality for the **F** category indicators - **micropollutants,** was assessed at 168 abstraction sites for all groups. For the years 2005-2006, there was 49.5 % of samples with acceptable water quality (I - III. quality categories) at 83 abstraction sites. Unacceptable water quality (IV and V quality categories) was recorded for 50.5 %, which means 85 abstraction sites (for the period of 2002-2003 it was 53.8 %).

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.

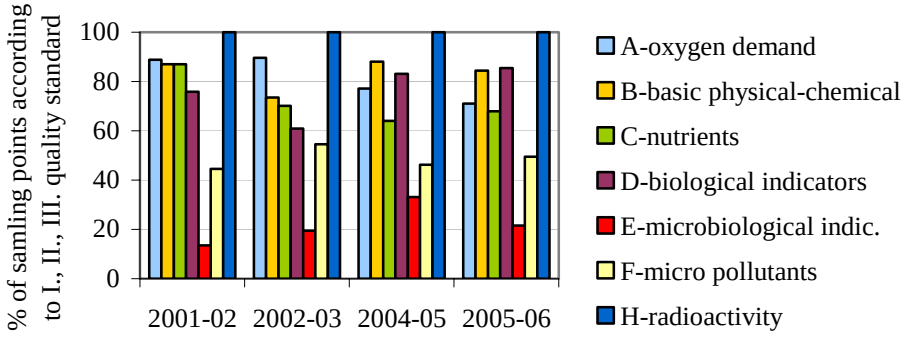
Surface water quality categories in the group A – oxygen demand in years 2005-2006



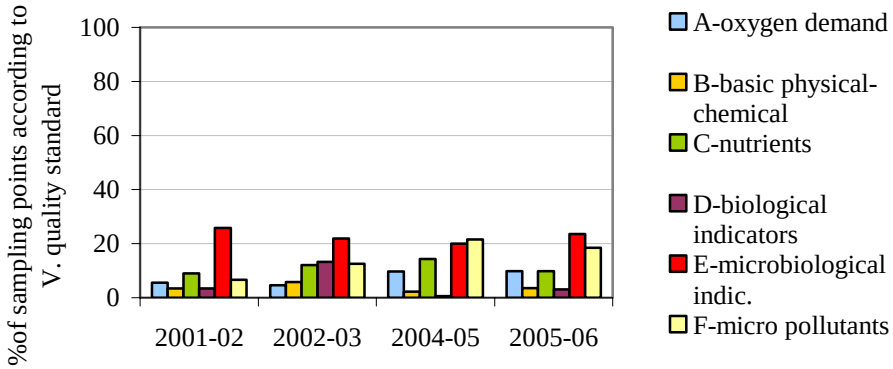
Source: SHMI

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)

Proportion of indicator groups for surface water quality involved in classification into the I., II., and III. quality categories (pursuant to STN 75 7221)



Proportion of indicator groups for surface water quality involved in classification into the V. quality categories (pursuant to STN 75 7221)



Source: SHMI

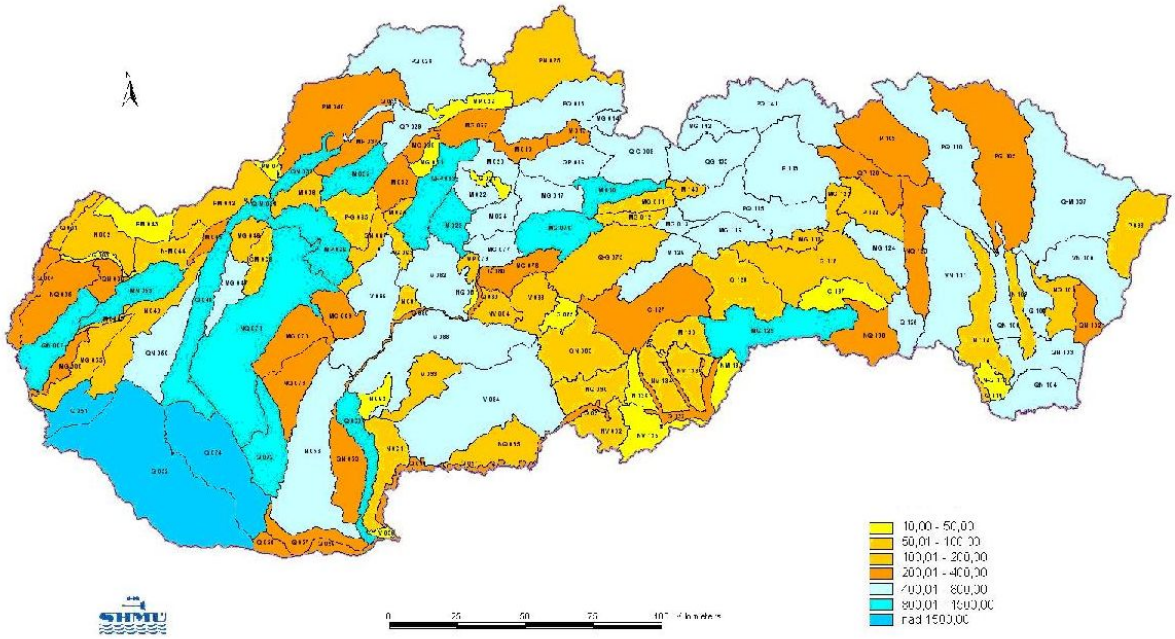
Ground water

♦ Water resources

In 2006, based on the hydro-geological assessment and surveys in Slovakia, there were **76 748 l.s^{-1} available groundwater resources**. In the long run. increase in available volume is 1 973 l.s^{-1}, that is 2.6 %, compared to 1990.

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.

Efficient groundwater volumes in the hydrogeological regions in 2006 (l.s^{-1})



Source: SHMI

On the basis of assessment of water management balance expressed by the balance status (proportion of abstractable volumes/abstractions), which is the indicator that shows the rate of wate sources abstraction, we see that in **2006, out of total number of 141 hydro-geological regions in SR, 120 regions show good balance status, 18 regions show acceptable status, two regions show tense, and one region shows critical status.** No region showed emergency balance status.

♦ 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.

In 2006, the highest annual recorded values of ground water levels and spring yields in lowlands were dominant in the Spring season, from the end of March till the beginning of June, ocassionally in August. With increasing altitudes, occurrence of the greatest ground water 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 ground water 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.

♦ **Gabčíkovo interest area**

In 2006, rainfall volumes in Žitný ostrov totalled more than long-term average annual totals, and still more than annual totals during the operation of Gabčíkovo waterworks. Highest monthly totals were reached their peak values in May through August, which, in connection to high levels in Danube, also caused an increase in ground water levels. Lowest monthly rainfall totals recorded in the whole Žitný ostrov were in October.

The runoff balance below the Gabčíkovo waterworks (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 ground water 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 during the flood period).

♦ **Groundwater abstraction**

In 2006, total volume of **abstracted groundwater average was 11 665.2 l.s^{-1}**, which is 15.2 % of all recorded available volumes. Over the course of 2006, ground water abstractions again showed a reduction, this time is was milder - only by 202.3 l.s^{-1} , which is a reduction by 1.7 %, compared to 2005.

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.

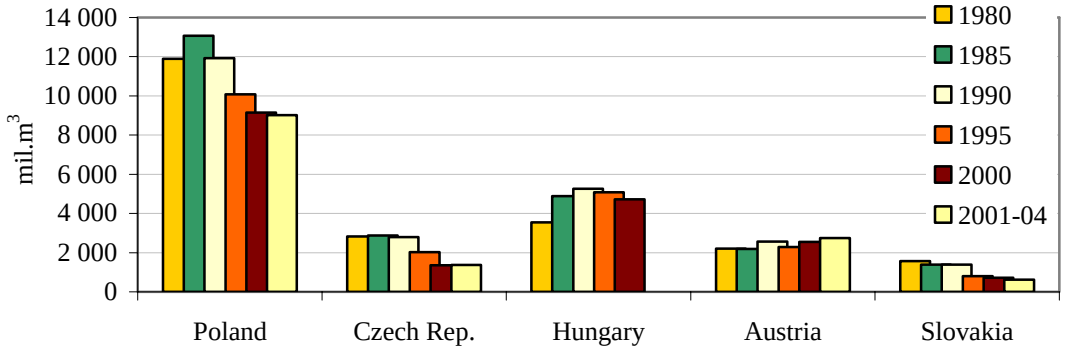
Groundwater extraction in 2006 according to the purpose of use

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
2006	8 836.13	295.62	852.34	275.80	94.96	340.15	970.20	11 665.20

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

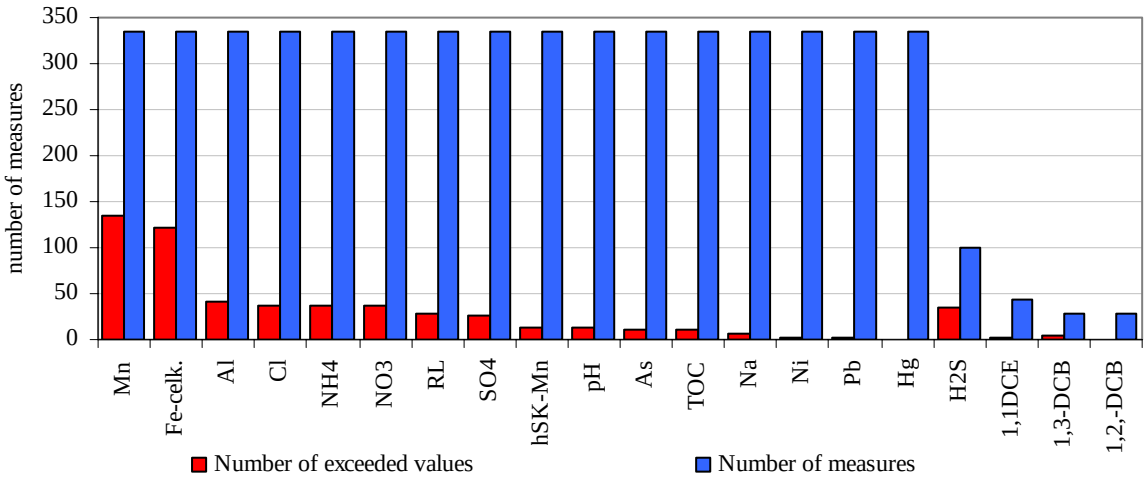
♦ **Groundwater quality**

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 2006 there were 334 objects monitored in total which included 219 bores within the basic SHMI network 27 used and 17 idle bores (investigative bores), 46 used and 25 idle springs.

Acceptable concentration figures (maximum acceptable concentration) defined under Regulation of the MoH SR No. 354/2006 Coll. on drinking water demands and drinking water quality, were exceeded in 2005 mostly for the following indicators: Fe_{total} (122 times), Mn (134 times), and Al (42 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.

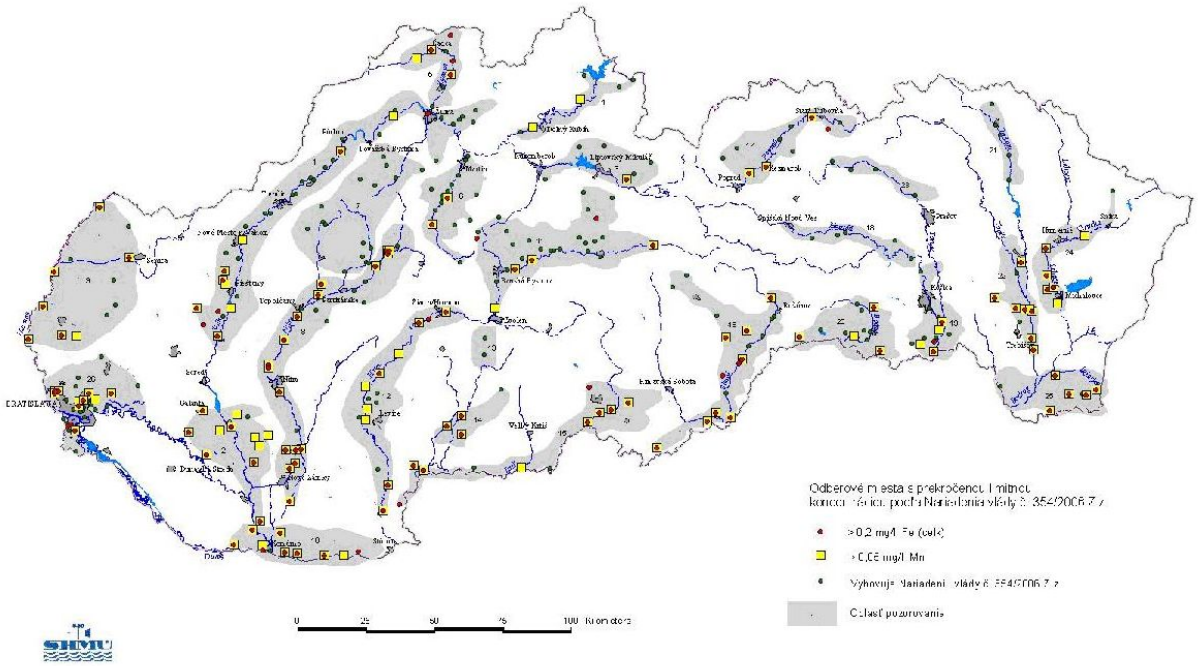
Just like in the previous years, contamination by **organic substances,** indicated by exceeded acceptable COD_{Mn} concentration, is still present. Since in 2006, non-polar extractable substances were determined as the hydro-carbon index, we did not record any exceeding values for this indicator at 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 (36 times in nitrates).

Most frequently recorded **trace elements** included increased aluminium (42 times), arsenic (11 times), nickel (2 times) and mercury (1 times) concentrations.

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

Groundwater quality in Slovakia in 2006 – concentration Fe (tot.) a Mn



Source: SHMI

♦ **Ground water quality assessment on Žitný ostrov in the years 2005-2006**

Limit values (highest threshold values) defined under the SR Government Resolution 354/2006 Coll., which sets forth criteria for water for human consumption and control thereof, were exceeded in Žitný ostrov in 2005, most often for the following indicators: total Fe (93-times), Mn (79-times), NH_4

(14-times) a NO_3 (12-times). In 2006 were exceeded indicators: total Fe (97-times), Mn (79-times), NH_4 (15-times) a NO_3 (10-times) from total number 248 analyses.

In 2005, 55.65 % of all analyses did not meet the criteria under the SR Government Resolution 354/2006 Coll., while in 2006 it was 54.44 %. This means that of total number of 248 analyses in 2005, 138 of them were those that showed at least one indicator that exceeded the criteria set forth in the government resolution. In 2006, the number was 135.

Waste Water

Decreasing trend in discharged waste water remained also in 2006, 733 594 thous.m^3 of **waste water** was discharged into surface watercourses in Slovakia, which represents a reduction by 148 352 thous.m^3 (16.8 %) compared to 2005, and a drop by 406 386 thous.m^3 (35.6 %) compared to 1996. Reduction in waste water load remained also for the selected indicators of contamination, most markedly seen in chemical oxygen balance by dichromate, by 5 749 t.$year^{-1}$, compared to 2005. For the other indicators, the reduction was less dramatic: insoluble substances (NL) by 1 470 tons/year, biochemical oxygen demand by 1 635 tons/year, and NEL $_{uv}$ by 11 tons/year.

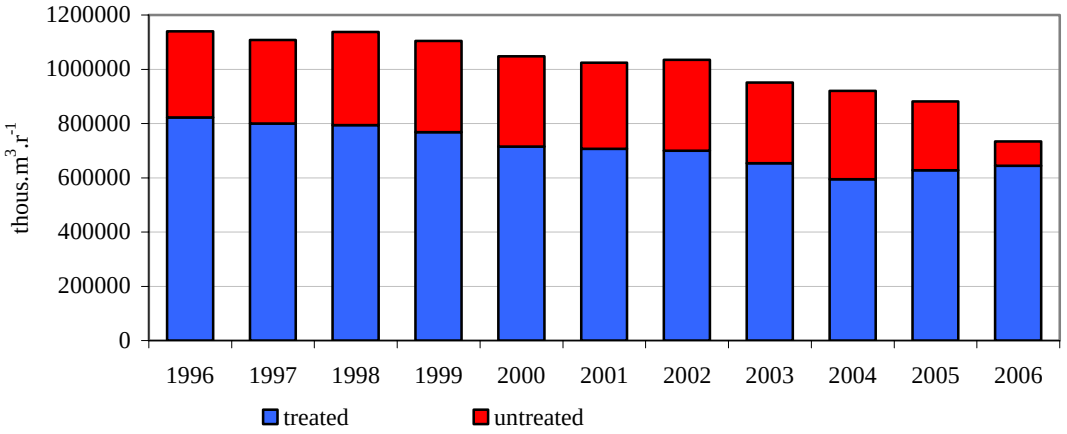
Percentage of discharged treated waste water to **total volumes of waste water** discharged into watercourses in 2006 was 87.9 %.

Load of the balanced contamination sources discharged into surface watercourses in the period of years 1996-2006

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})
1996	1 139 980	41 107	27 370	75 843	627
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
2006	733 594	11 200	9 026	31 563	44

Source: SHMI

Trend in discharging of the treated and untreated waste waters into watercourses in the period of 1996-2006



Source: SHMI

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. Medium and large size waste water treatment plants remove organic contamination with good efficiency; however, they stay behind in their capacity to remove nutrients. In fact, the largest waste water treatment plants show several cases of overload, when they are not able to remove all received contaminants. This, in turn, is reflected in a lower proportion of acceptable parameters of basic organic contamination.

Public water supply, sewerage systems and waste water treatment plants

- **Public water supplies**

In 2006 **number of inhabitants supplied with drinking water from the public water supply** reached the number of 4 654 thousand, which represented 86.3 % of supplied inhabitants. There were in the SR 2 208 individual municipalities that were supplied with public water supply, and their portion on total SR municipalities was 76.4 %. The highest proportion of supplied municipalities is in the Bratislava region. Compared to 2005, share of supplied municipalities increased in the Trenčín

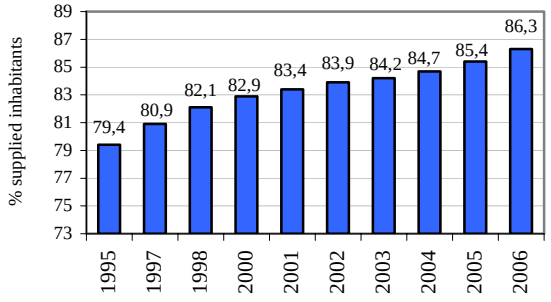
region (91.7 %), Bratislava region (97.3 %), and Žilina region (98.7 %). However, compared to 2005, Banská Bystrica, Prešov, and Košice regions showed unchanged number of municipalities with public water supply.

Capacity of operated water sources in 2006 reached the value of 33 690 l/s, while ground water sources represented 27 860 l/s, and surface water sources 5 830 l/s.

The year 2006 showed only a minimal reduction in drinking water abstraction. **Volume of produced drinking water** in 2006 reached the value of 334 mil.m^3, which compared to 2005, represents a reduction only by 18 mil.m^3. Of all the ground water sources, 281 mil.m^3 was produced (reduction by 18 mil.m^3), while 53 mil.m^3 of drinking water was produced of all surface water sources, (same level as in 2005). Of total water produced at water management facilities, **water losses** by pipe network were 32.8 % in 2006. **Specific water consumption for households** increased in 2006 to 107 l.inhab^{-1}.day^{-1} (in 2005 it was 104 l.inhab^{-1}.day^{-1}).

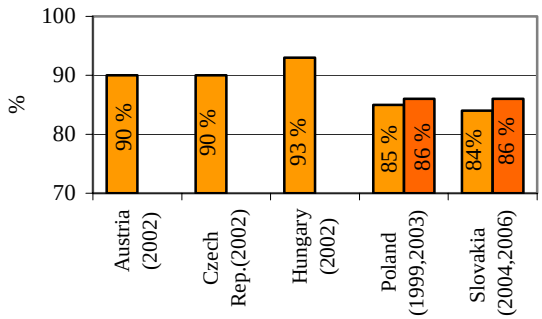
Also other countries showed a decreasing trend in the annual water consumption from public water supplies per capita. Czech Republic and Slovakia are approximately at the same level in terms of water consumption, while Poland shows the least consumption – only 57 m^3.inhab^{-1}.year, Hungary shows the 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

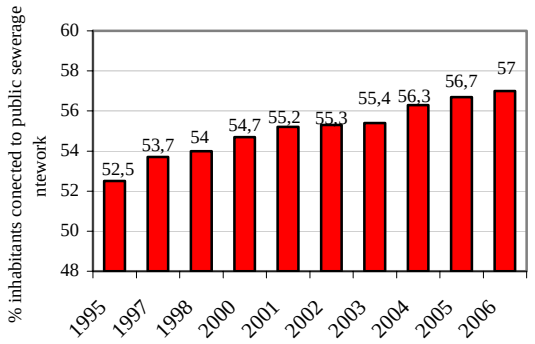
♦ **Sewerage system**

Development of public sewerage systems lags behind that of public water supplies. **Number of inhabitants** living in households **connected to public sewerage systems** in 2006 grew by 20 thousand, compared to 2005, and reached the number of 3 075 thous. inhabitants, which is 57.1 % of all inhabitants. Of the number of 2 891 of stand-alone municipalities in 2006, 614 of them had public sewerage systems in place (i.e. 21.2 % of all Slovak municipalities), while 552 municipalities (i.e. 19.1 % of all Slovak municipalities) had their wastewater sent directly off to the wastewater treatment

plant. Adverse situation remains also in individual regions of Nitra, Trnava, and Prešov, these regions stay behind the national average.

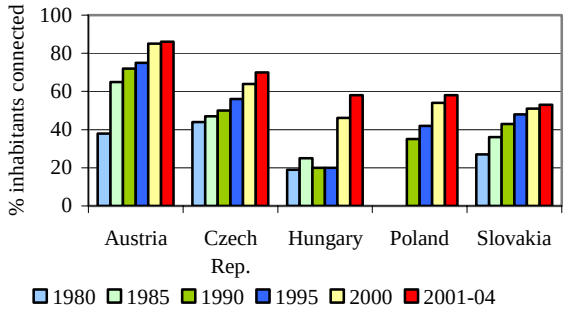
Greatest level of connectedness of the public to the public sewerage system from among the V4 countries reached Austria (86 %), and the Czech Republic (70 %), Poland, Hungary, and Slovakia show approximately the same level of connectedness, 56 % on average.

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 2006, 12 waste water treatment plants were added into the Administration of water supplies and water sewerage systems (VaK) scheme, reaching the number of 454. Greatest share on these had mechanical-biological WWTPs (86.2 %). Increase in WWTP's capacity was still on the rise, reaching the value of 2 200.7 $m^3.day^{-1}$ in 2006.

In 2006, watercourses with public sewerage system (administered by municipalities and water management companies) received 452 $mil.m^3$ of discharged waste water, which was by 9 $mil.m^3$ more than in the previous year, and the volume of treated waste water discharged into the public sewerage system in 2006 reached 440 $mil.m^3$.

Volume of the discharged wastewater by the public sewerage system (in administration of VaK and in administration of the municipalities) in 2006

Water discharged by the public sewerage and WWTP	Sewage	Industrial and other	Precipitation	Separate	Adminis -tration of the municipalities	Total
	(thous.m^3.$year^{-1}$)					
Treated	119 734	85 351	62 558	162 435	10 538	**440 616**
Untreated	2 559	1 635	1 690	4 522	1 444	**11 850**
Total	**122 293**	**86 986**	**64 248**	**166 957**	**11 982**	**452 466**

Source: WRI

In 2006, there were 54 780 tons of the sludge dry matter produced in municipal WWTPs. Of this, 39 405 tons (71.9 %) were used for soil processes, 6 130 tons (11.2 %) were temporarily stored, and 9 245 tons were landfilled (16.9 %). In 2006, there was direct application of sludge into the

agricultural soil. 33 630 tons of sludge dry matter was used for compost production, while 5 775 tons of sludge were used for soil processes (reclamation of landfills, areas, 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	Incine-rated	Land filled		In other way
						Total	Suitable for the further use	
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
2006	54 780	0	0	39 405	0	9 245	8 905	6 130

Source: WRI

Drinking water

- **Drinking water quality monitoring and assessment**

As from June 1, 2006, new **SR Government Resolution no 354/2006 Coll.** came into effect, which sets forth criteria for water for human consumption and control thereof, and which has lead to minor changes to drinking water quality criteria and assessment criteria (e.g. saprophytic molds were left out of the range of microbiological and biological indicators). Due to the transitory nature of the year 2006, drinking water quality for microbiological and physical and chemical indicators was still assessed under the MZ SR Resolution 151/2004 Coll. Radiological indicators were determined in accordance with the Regulation of MoH SR No. 29/2002 Coll, on demands to ensure radiation control. Water quality was assessed on the basis of the number or proportion of individual limits shown to have exceeded the pertinent sanitary norms. In 2006, were analyzed at operation laboratories of water management companies 13 334 samples. The samples were abstracted at sites located within distribution networks and 366 397 analyses were carried out to monitor individual drinking water quality indicators. Share of drinking water analyses that complied with the sanitary limits in 2006 reached 99.44 % (in 2005 it was 99.32 %). Percentage of samples that meet drinking water quality demands for all indicators reached 91.18 % (in 2005 it was 89.59 %). These samples did not include the active chlorine indicator, as this test was done separately, in relation to the microbiological quality of drinking water.

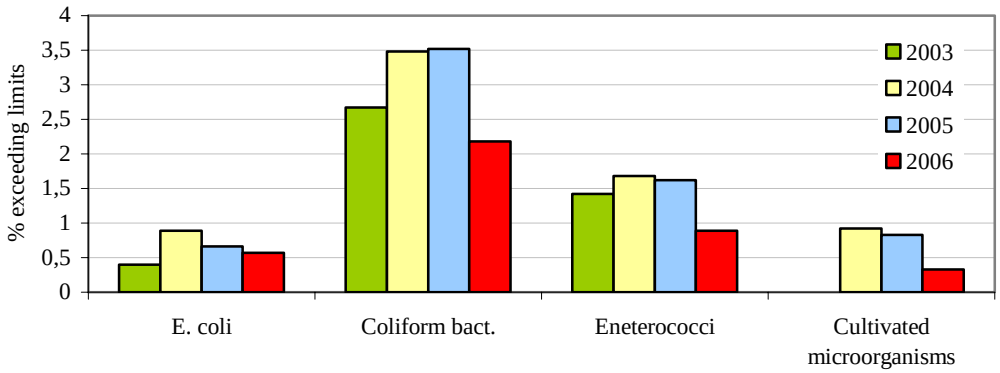
Exceeding limits in drinking water samples in accordance with the Regulation MoH SR No. 151/2004 Coll. on demands on drinking water and drinking water control

Year	2004	2005	2006
Share of drinking water samples that do not meet the NMH and MHRR limit.	2.03 %	2.10 %	1,32 %
Share of drinking water quality indicators analyses that do not meet NMH and MHRR	0.54 %	0.55 %	0,32 %
Share of drinking water samples that do not meet the MH, NMH, MHRR and IH limit.	22.56 %	19.29 %	17,84 %
Share of drinking water indicator analyses that do not meet the MH, NMH, MHRR, and IH limits, pursuant to STN 75 711.	1.48 %	1.15 %	1,05 %

Source: WRI

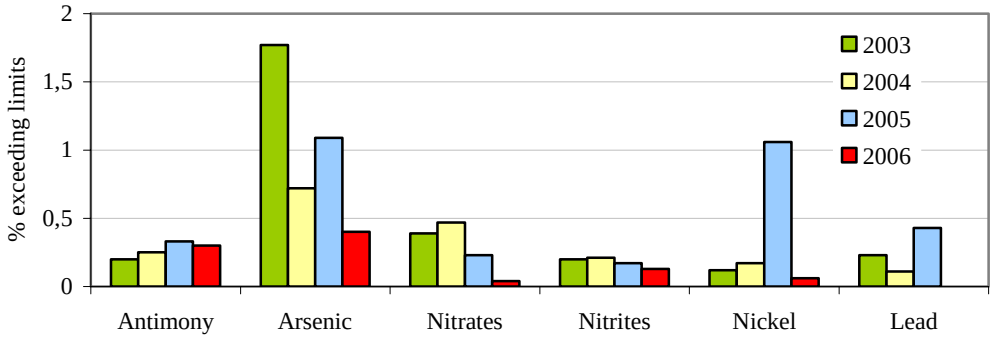
IH – indicative values, MH - threshold values, NMH - maximum threshold values, MHRR – threshold values of the reference risk

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



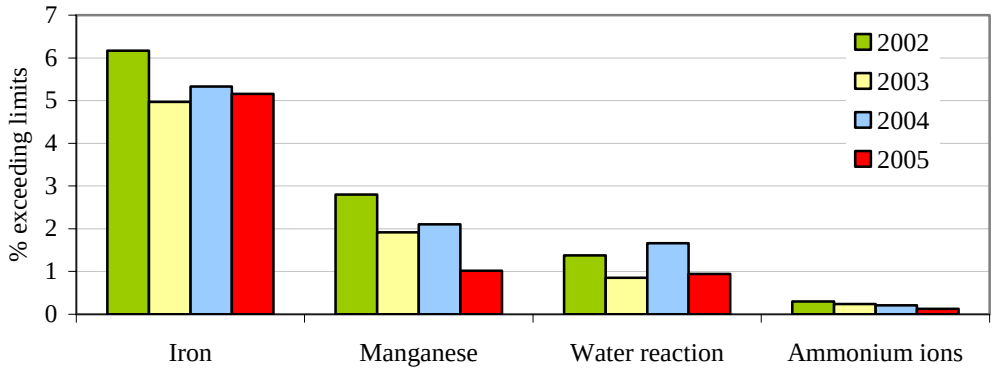
Source: WRI

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



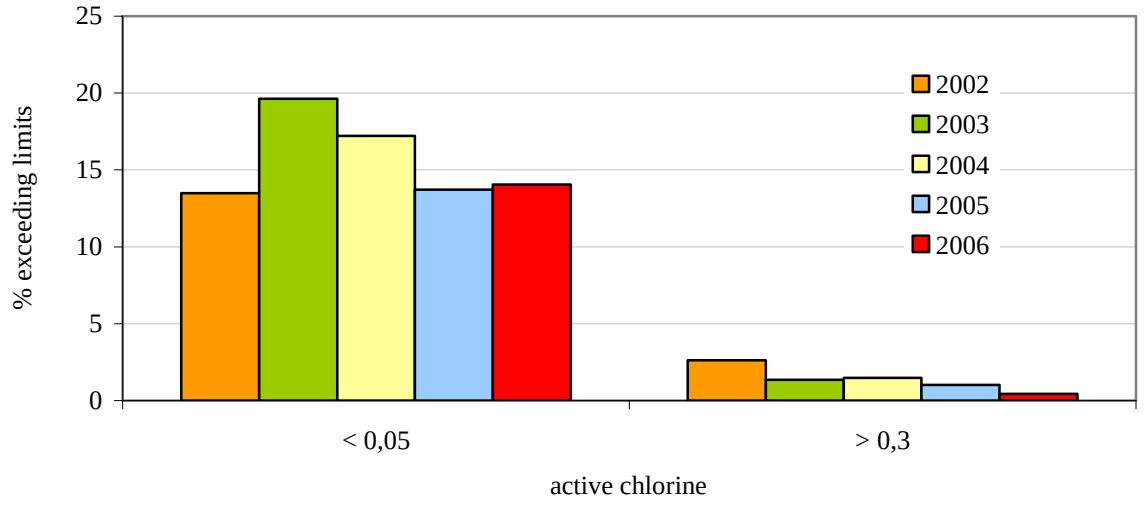
Source: WRI

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



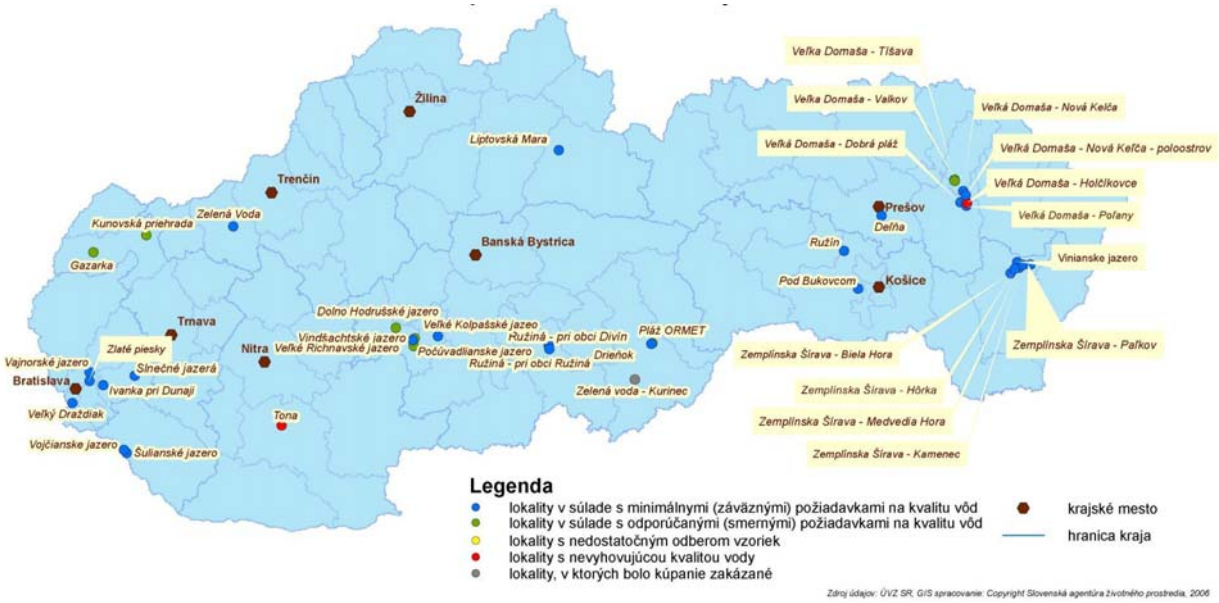
Source: WRI

Quality of recreational water in 2006

Since 35.9 % of sites in Slovakia in 2005 showed values below the limits for recreational use of water, which was caused also by inadequate water monitoring, the Slovak government established a competency to monitor water designated for recreational use through its **Act 126/2006 Coll. on public health and on amendments of some laws, as well as through the SR Government Resolution 225/2006 Coll. on details regarding the operation of swimming areas, water suitable for swimming, and its control.** The commissioned, competent authorities are PHA SR (Public Health Authority of the Slovak Republic), and regional PHA in SR, along with operators of individual sites, that are to follow the frequency and mothods in line with the EEC Resolution 76/160 regarding the quality of water designated for bathing.

Over the season, 463 water samples were extracted and 7 219 tests were done on chemical, physical, microbiological, and biological water quality indicators, 344 indicators exceeded the national limit values. The most frequent cause for unacceptable water quality included changes to color and clarity, above-limit content of microbiological indicators for coliform bacteria and enterococcus, above-limit content of algae, chlorophyl a, and total phosphorus. In comparison with the previous years, the occurence of blue-green algae over the monitored time period was generally lower, in most cases below the limit values.

Quality of water suitable for recreational use during the summer season of 2006



Source: IoPH, SEA

The SR report on the quality of water for recreational use in 2006 was developed on the basis of article 13 of Resolution 76/160/EEC on quality of water suitable for recrational use. For 2006, the report included 38 swimming areas, 71.7 % of which complied with more stringent water quality criteria. 92.1 % of swimming areas complied with the minimum standards, while 5.3 % did not. Swimming was prohibited in 2.6 %.

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.

From 1.1.2006 data are monitored:

01: Landslides and other slope deformation

02: Tectonic and seismic activity of the territory

03: Anthropogenic sediments of environmental loads sediments

04: Influence of mineral exploitation upon environment

05: Monitoring of the volume activity of Radon in the geological environment

06: Stability of massifs underlying historic objects

07: Monitoring of stream sediments

04: Volume unstable soils

Summary of the major outcomes from the monitoring activities in 2006:

In 2006, monitoring of three basic types of **slope movements** was carried out – slides, creep, and signs of activated falling movements. Measurements were for in 15 selected sites.

Tectonic movements were observed within a testing operation of the Slovak spatial observing servise for the usage of satelite GPS equipment. Reports from seismic stations supplied for intepretation more than 6 140 teleseismic, regional, or local seismic phenomena. About 70 micro temblors were localized (earthquakes with no macro-seismic impacts) with their epicenter in the studied area of Slovakia. In 2006, there were in Slovakia 5 earthquakes observed as macro-seismic. Epicenters of 4 of these zones

were in the Slovak territory (2 in the source area of Dobrá voda, and 2 in the source area of Považský Inovec). Furthermore, there was in Slovakia 1 observed earthquake with its epicenter in Ukraine.

Of all **anthropogenic sediments of the character of environmental loads** in 2006, there were 145 report cards processed from *abandoned landfills.*

Processed abandoned landfills

District	Number of processed loads	Monitoring of loads
Liptovský Mikuláš	44	2
Poprad	10	-
Rožňava	36	1)
Michalovce	14	3
Sobrance	17	2
Trebišov	19	5
Prievidza	5	-
Total	145	13

Source: SGI DS

In 2006, the following sites of *tailings dumps* were monitored: Nováky – ENO (Electric power plants of Nováky) temporary, Nováky – ENO original, Nováky – ENO definite, Banská Štiavnica – Lintich, and Sedem žien (sampled and analysed 10 non-damaged and 20 damaged samples of floating sludge), Duslo Šaľa - Amerika 1, Duslo Šaľa - RSTO (Operated solid waste landfill).

A way of relative **environmental impact assessment of mineral exploitation** and risk potential of individual sites was suggested, along with processing of information on the existing monitoring and demolition activities at sites that pose most risks. The following sites were proposed for further monitoring:

- Area of brown coal extraction (Upper Nitra region – Handlová, Cígeľ, Nováky)
- Area of magnesite and talc extraction (Jelšava - Lubeník – Hnúšťa, Košice – Bankov)
- Areas of ore deposits (Middle Spiš – Rudňany, Slovinky, Smolník, Novoveská Huta, Rožňava-Nižná Slaná, Banská Štiavnica – Hodruša – Kremnica. Špania Dolina, Dábrava – Magurka, Pezinok).

Monitoring of the volume Radon activity was done in 2006 at six sites that showed medium to high Radon risk (Bratislava – Vajnory, Banská Bystrica – podlavice, Novoveská Huta, Teplička, Hnilec a Košice).

Total number of **radon** monitoring activities **in water** includes 28 in-field monitoring days per year, and 56 extracted ground water samples.

Monitoring of stability of rock massifs below historic objects was carried out on selected castles. In June 2006, a measuring devise was also installed at the Trenčín castle.

48 reference sampling sites for **alluvial sediments monitoring** were analysed. Strong contamination of alluvial sediments was found at the following sampling sites: Nitra – Chalmová, Nitra – Lužianky, Nitra – pod Šuranmi, Štiavnica – river mouth, Hornád, and Hnilec. **Monitoring of quality of solid precipitations** was carried out at 43 sampling sites. Highest pH values were found at Bratislava –

Slovnaft site, highest arsenic content was found at Horná Nitra, highest Pb content was found at Bratislava – Slovnaft, and highest Al content was found at Lehôtka pod Brehy.

During monitoring of **volume volatile soils** on the territory of the Poddunajská lowland, there were 94 damaged objects documented in towns and villages, while such objects were found in 58 towns and villages of the Východoslovenská lowland.

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. Monitoring wells carried out to date documented 1 787 l/s of water with the outflow temperature of 18-129ºC. Their heat output represents 306.8 MWt (when used at the reference temperature of 15ºC).

Register of geological mapping

Registers of geological mapping (as of December 31, 2006)

Registers of	Accumulation in 2006	Total number
surveyed territories	39	467
surveyed territories drafts	61	420
landslides	2	11 395
wells	2 201	735 157
hydro-geological wells	186	22 981
landfills	1	8 450
map drawing and purpose mapping	249	9 617
geophysical mapping	765	4 382
abandoned mining works	52	16 569

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, 2006

Type of abandoned mine	Number
Mining shaft	4873
Pit (hole)	517
Chute	63
Cut, excavation	88
Pingo	3 987
Pingo field	109
Pingo draw	128
Dump	6 125
Old randing	205
Sink mark	292
Placer	20
Tailings dump	10
Other	152
Total	**16 569**

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 2006, there were 39 survey areas and 61 registered proposals to designate a survey area. As of December 31, 2006, there were 108 recognised areas.

Overview of deposits in Slovakia

Energy deposits (state to the date 31st December 2006)

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	11	6	4	thous. t	145 068	468 382
Flammable natural gas – gasoline gas	8	6	2	thous. t	202	399
Lignite	8	3	1	thous. t	112 235	619 810
Non-resinous gases	1	0	0	mil. m^3	0	6 360
Underground stores of natural gas	8	0	0	mil. m^3	0	2 151
Crude oil non-paraffinic	3	3	0	thous. t	1 632	3 422
Crude oil - semi-paraffinic	8	4	4	thous. t	140	6 435
Uranium ores	2	1	0	thous. t	1 396	5 272
Natural gas	39	22	11	mil. m^3	8 824	27 059
Total	**90**	**47**	**22**		**281 285**	**1 158 093**

Ore deposits (state to the date 31st December 2006)

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	3 276
Complex Fe ores	7	2	0	thous. t	5 751	57 762
Cu ores	10	0	0	thous. t	0	44 350
Hg ores	1	0	0	thous. t	0	2 426
Poly-metallic ores	4	1	0	thous. t	1 623	23 671
Wolfram ores	1	0	0	thous. t	0	2 846
Gold and silver ores	11	5	0	thous. t	26 480	31 960
Fe ores	2	2	1	thous. t	15 909	20 262
Total	**45**	**11**	**1**		**49 848**	**186 553**

Source: SGI DS

Non-metallics deposits (state to the date 31st December 2006)

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	7	6	2	thous.t	806 497	1 250 527
Asbestos and aspestos rock	4	1	1	thous. t	3 710	26 904
Baryte	6	2	2	thous. t	9 556	12 741
Bentonite	23	17	6	thous.t	28 912	42 192
Cast basalt	4	4	1	thous. t	22 906	40 081
Decorative rock	19	16	2	thous. m^3	19 907	25 465
Diatomite	2	1	0	thous. t	3 342	4 955
Dolomite	20	20	11	thous. t	610 723	637 190
Precious stones	1	1	0	ct	1 205 168	2 515 866
Graphite	1	0	0	thous. t	0	294
Halloysite	1	0	0	thous. t	0	2 249
Rock salt	4	4	1	thous. t	839 633	1 350 615
Kaolin	14	13	3	thous. t	54 602	59 884
Ceramic clays	36	33	6	thous. t	115 767	190 358
Quartz	7	7	0	thous. t	310	327
Quartzite	15	13	1	thous. t	18 352	26 951
Magnesite	11	6	3	thous. t	748 198	1 128 121
Talc	5	2	0	thous. t	86 637	235 201
Mineralized I - Br waters	1	1	0	thous. m^3	3 658	3 658
Pearl stone	5	5	1	thous. t	30 265	30 585
Pyrite	3	0	0	thous. t	0	18 717
Gypsum	6	5	2	thous. t	62 768	93 528
Sialitic raw material	5	5	2	thous. t	82 802	96 165
Glass sands	4	4	1	thous. t	411 657	590 383
Mica	1	1	0	thous. t	14 073	14 073
Building rock	129	123	77	thous. m^3	632 613	746 715
Gravel sands and sands	26	24	18	thous. m^3	164 444	186 185
Brick clay	32	29	11	thous. m^3	96 319	120 690
Technically usable mineral crystals	3	1	0	thous. t	253	2 103
Limestone – unspecified	29	26	13	thous. t	1 870 562	2 207 526
High-content limestone	10	10	4	thous. t	3 198 368	3 362 290

Zeolite	6	6	2	thous. t	106 160	111 384
Foundry sands	14	14	1	thous. t	294 311	509 347
Refractory clays	7	6	0	thous. t	3 105	3 263
Feldspars	6	6	0	thous. t	10 402	11 640
Total	**475**	**419**	**173**		**11 722 671**	**15 827 116**

Source: SGI DS

Classification of mineral deposits by state of extraction (state to the date 31st December 2006)

Extraction symbol	Characteristics	Number of deposits
1	*Deposits with developed extraction activity* include exclusive mineral deposits sufficiently open and technically apt for extraction of industrial deposit.	**208**
2	*Deposits with fading extraction activity* include extraction mineral deposits where extraction activity will cease in a near future (within 10 years)	**29**
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)	**29**
4	*Deposits with ceased extraction* include exclusive mineral deposits with definitely or temporarily stopped extraction activity.	**96**
5	*Non-extracted deposits* include documented exclusive mineral deposits soon **to be** constructed and extracted.	**50**
6	*Non-extracted deposits* include documented exclusive mineral deposits **with no plans** for their extraction.	**184**
7	*Surveyed deposits* include deposits of exclusive and non-exclusive minerals with various degree of mapping.	**13**

Source: SGI DS

Non-limited mineral deposits (as of December 31, 2006)

Raw material	Number of listed deposit sites	Number of sites with extraction activities
shale	3	1
floating sand	1	0
tailings, waste	6	0
clays	1	0
building stone	144	40
ballast and sand	194	81
brick raw material	57	0
tuff	1	0
dried sludge – brucit	1	1
Total	**408**	**123**

Source: SGI DS

♦ **Ground water volumes**

Ground waters deposits in the SR (state to the date December 31, 2006)

Category	A	B	C	Total
Efficient deposits of the ground waters (l.s-1)	-	96.06	2 841.10	2 937.16
Efficient amounts of the ground waters (l.s-1)	-	-	9 851.76	9 851.76

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

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**

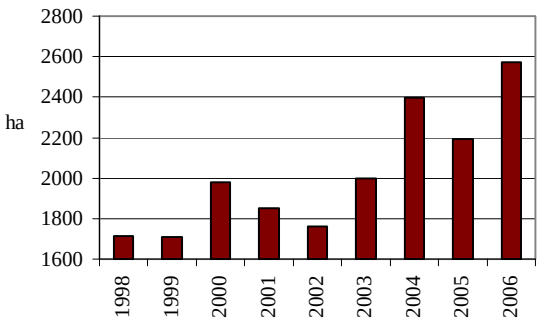
Land Use categories (state to the date 31st December 2006)

Land category	Area (ha)	% of total area
Agricultural land	2 430 683	49.57
Forest land	2 006 939	40.93
Water areas	93 325	1.90
Build-up land	227 092	4.63
Other land	145 357	2.96
Total area	4 903 397	100.00

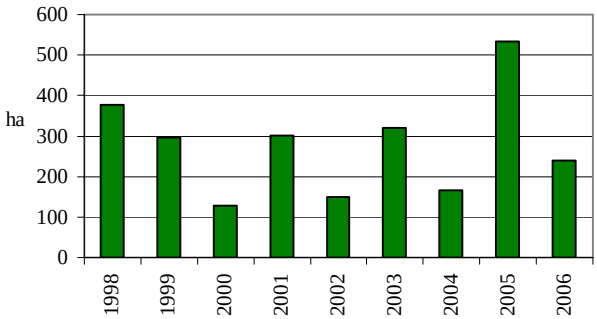
Source: IGCC SR

Anthropogenic pressure to use soil for purposes other than its primary production and environmental functions brings about its gradual decrease. In the years 1999-2006, **losses of agricultural soil to construction** grew on the year-year basis, mainly for public, house, and industrial construction purposes (1 380 ha in 2006).

Trend in agricultural soil loss including the losses of arable soil to forestland, non-agricultural and non-forested soil in the SR



Trend in forestland loss to agricultural soil, non-agricultural and non-forested soil in the SR



Source: IGCC SR

Soil properties

Information on state and trend in agricultural soil 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 (SSCRI) and from the Agrochemical soil testing (AST) carried out by Central Controlling and Testing Institute in Agriculture (CCTIA). Information on state and trend in forest soil properties may be obtained from the Partial Monitoring System – Forests (PMS-F) carried out by the National Forest Centre – Forest Research Institute.

- **Chemical properties of soil**

Soil reaction

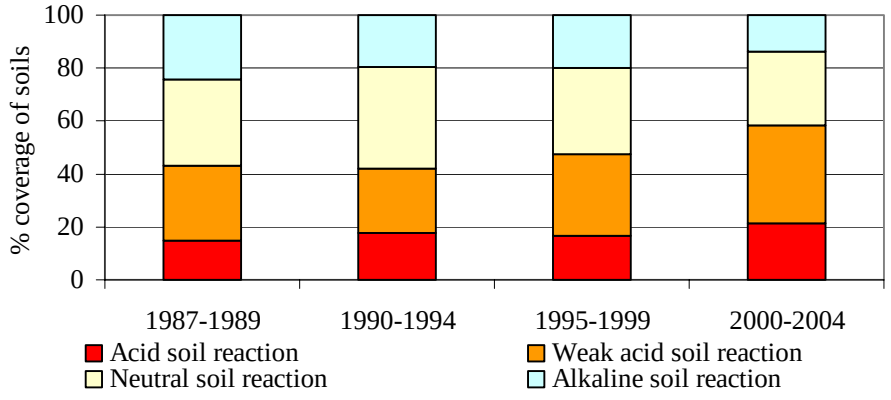
Trend in soil reaction (pH/H_2O) in the A-horizon of agricultural soil in Slovakia, based on the comparison of outcomes from three PMS-S cycles

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

Outcomes from agrochemical soil testing for the VIII. (1987-1989) through XI. (2000-2004) cycle show an **increase in the proportion of agricultural soil with acid** (+6.2 %) and **weak acid** (+8.8 %) **soil reaction.** On the other hand, a reduction was seen in the proportion agricultural soil with neutral (-4.7 %) and alkaline (-10.3 %) soil reaction.

Trend in agricultural soil reaction in the SR (in KCl) based on the outcomes from Agrochemical soil testing



Source: IGCC

Most Slovak forest soil is mildly to strongly acid.

Trend in exchange soil reaction (pH/$CaCl_2$) in selected soil types of fores soil in the SR based on comparison of the PMS-F results

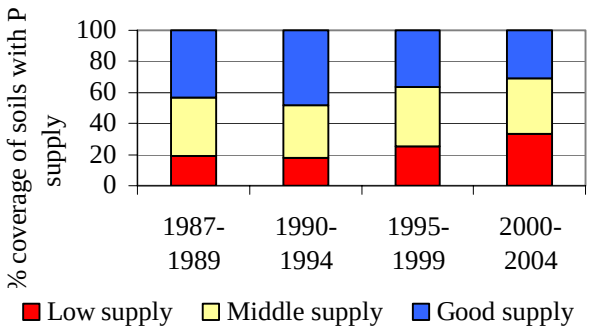
Main soil unit	1988	1993	1998	2006
Eutric Cambisols	4.23	4.10	4.14	4.05
Dystric Cambisols	3.57	3.30	3.65	3.62
Luvisols	4.16	4.10	4.14	4.25
Podzols	3.16	3.30	3.37	3.39
Rendzic Leptosols	6.36	6.85	7.04	6.54

Source: NFC - FRI

Available nutrients

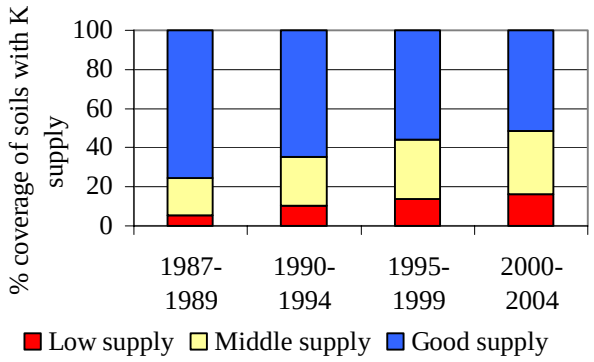
During the period VIII. (1987-1989) through XI. (2000-2004) of Agrochemical soil testing there was an **increase in low supply of all three available nutrients (phosphorus, potassium, and magnesium).** In phosphorus, it was by 14.6 %, by 10.7 % in potassium, and by 5.3 % in magnesium). However; during this period, good supply of all three available nutrients were reduced (by 12.4 % in phosphorus, by 24.2 % in potassium, and by 12 % in magnesium), which, in terms of plant nutrition, is a negative tendency.

Trend in phosphorus content in agricultural soil in the SR based on outcomes of Agrochemical soil testing



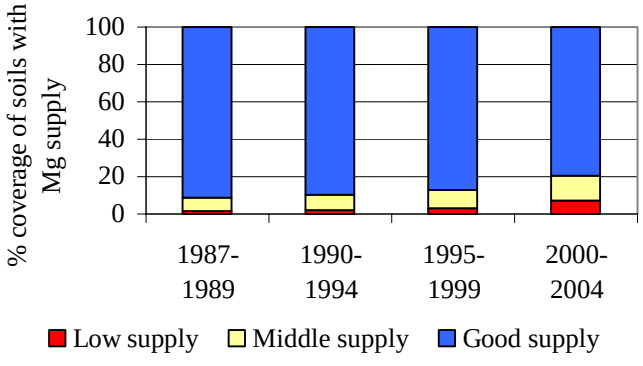
Source: IGCC

Trend in potassium content in agricultural soil in the SR based on outcomes of Agrochemical soil testing



Source: IGCC

Trend in magnesium content in agricultural soil in the SR based on outcomes of Agrochemical soil testing



Source: IGCC

Humus

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

Hlavná pôdna jednotka	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 vulcanites PG	5.00	3.62	5.69
Cambisols on vulcanites AL	3.65	3.17	4.52
Stagnic Cambisols PG	4.55	3.52	4.98
Stagnic Cambisols AL	2.86	2.26	3.17
Cambisols on acid substrates PG	6.17	4.72	6.76
Cambisols on acid substrates AL	3.09	2.41	3.71
Cambisosl on carbonate substrates PG	6.47	5	6.72
Cambisosl on carbonate 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, Skeletic Leptosols, Lithic 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 agricultural soils in the SR, 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

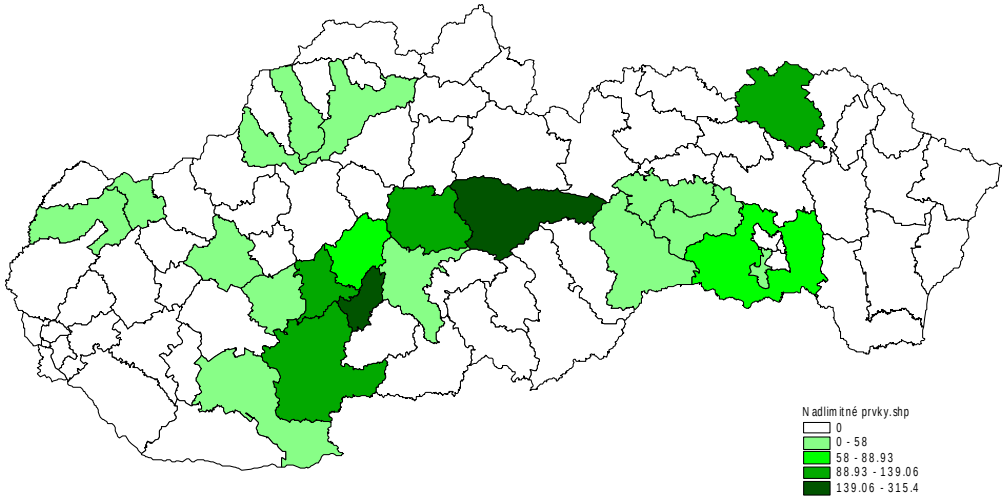
Serious soil degradation includes contamination with heavy metals and organic pollutants, acidification, as well as alkalinization and soil salinization. Recently, soil degradation through desertification grows in significance.

Soil contamination by hazardous substances

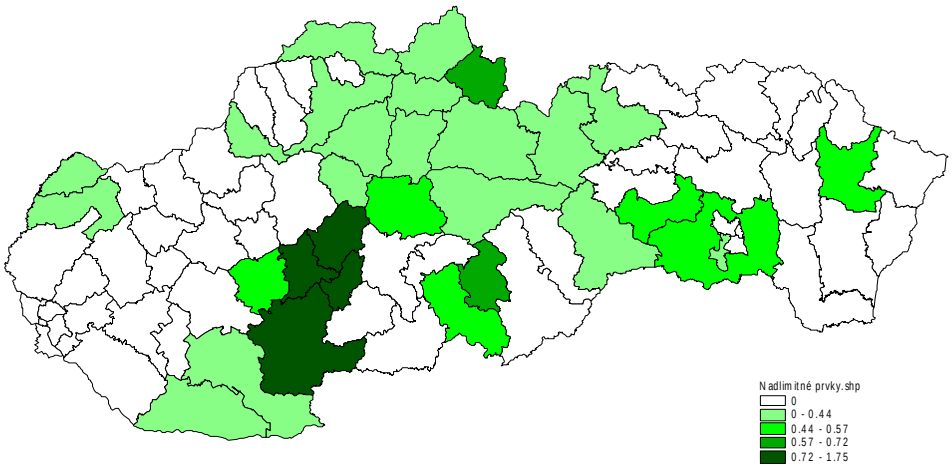
Results from the III. cycle of PMS-S with samples extracted in 2002 showed that the contents of the majority of hazardous substances in selected agricultural land of Slovakia are below the limit, especially being the case of arsenic, chromium, copper, nickel, and zinc. In case of cadmium, excessive limit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

Central Controlling and Testing Institute in Agriculture implements the **spatial soil contamination survey (SSCS)** as the PMS-S subsystem. SSCS monitors contaminants in agriculture soils in selected cadastre territories. Overview of limit-exceeding hazardous substances in agricultural soils of the SR is shown on maps.

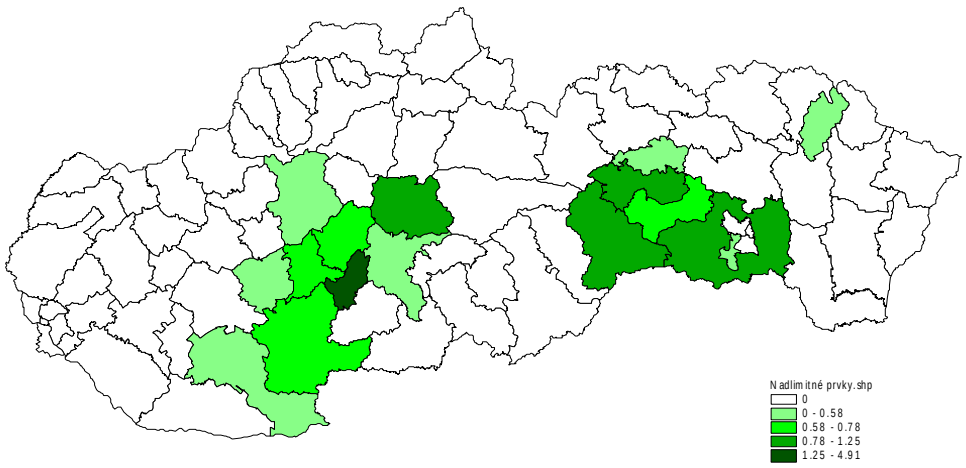
Overview of limit-exceeding values of lead in agricultural soils of the SR for the period of 2001-2005 (Pb limit = 30.00 mg/kg)



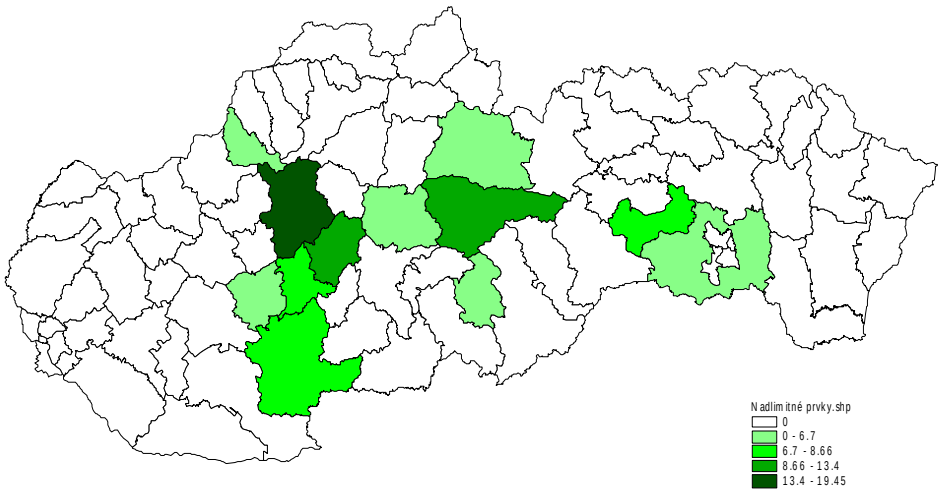
Overview of limit-exceeding values of cadmium in agricultural soils of the SR for the period of 2001-2005 (Cd limit = 0.30 mg/kg)



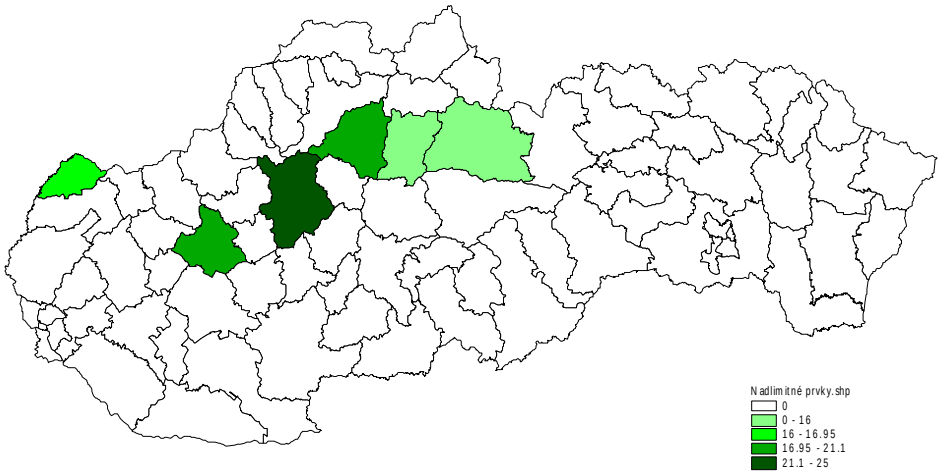
Overview of limit-exceeding values of mercury in agricultural soils of the SR for the period of 2001-2005 (Hg limit = 0.30 mg/kg)



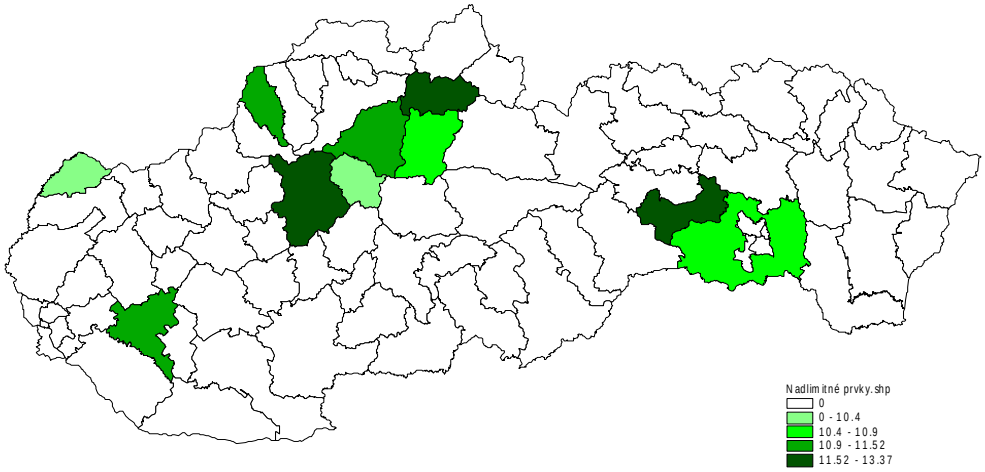
Overview of limit-exceeding values of arsenic in agricultural soils of the SR for the period of 2001-2005 (As limit = 5.00 mg/kg)



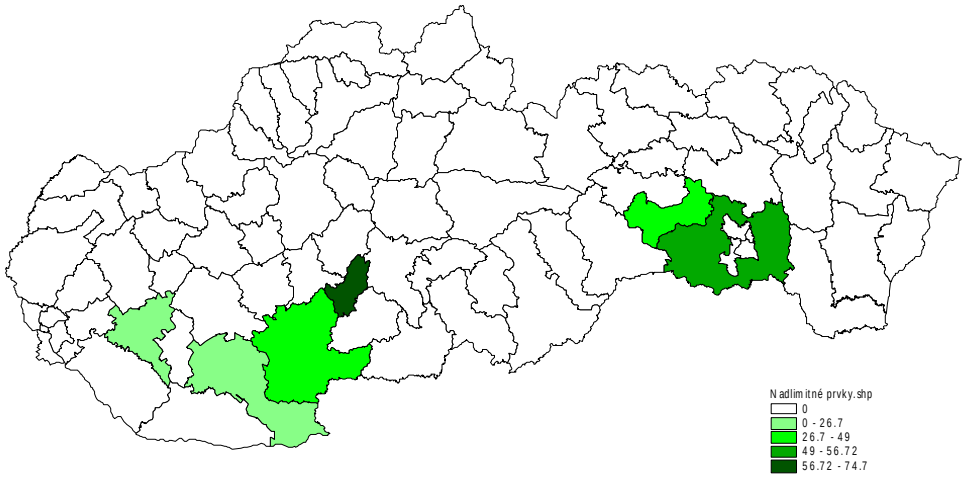
Overview of limit-exceeding values of chromium in agricultural soils of the SR for the period of 2001-2005 (Cr limit = 10.00 mg/kg)



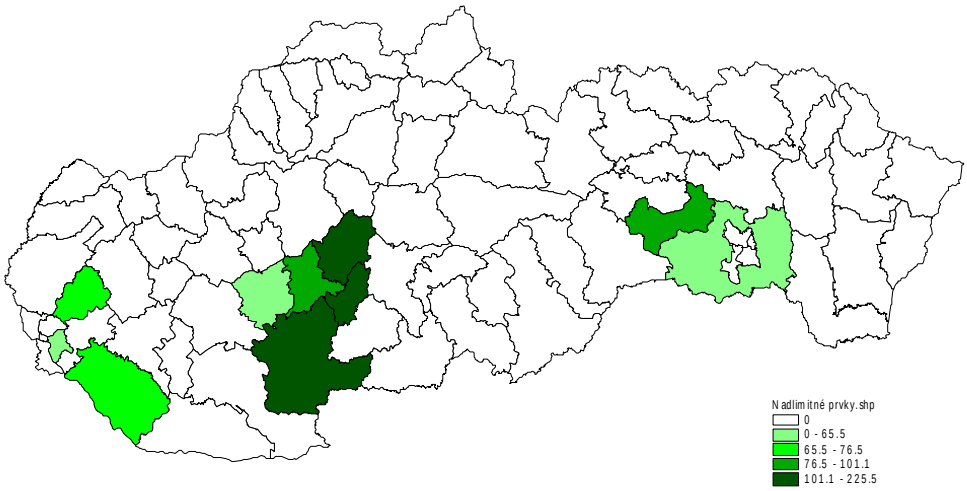
Overview of limit-exceeding values of nickel in agricultural soils of the SR for the period of 2001-2005 (Ni limit = 10.00 mg/kg)



Overview of limit-exceeding values of copper in agricultural soils of the SR for the period of 2001-2005 (Cu limit = 20.00 mg/kg)



Overview of limit-exceeding values of zinc in agricultural soils of the SR for the period of 2001-2005 (Zn limit = 40.00 mg/kg)



Complex monitoring for heavy metals **on forestland** has been carried out in a coordinated way throughout Europe. Over the monitored time period, there has been a significant **reduction in lead content in cover humus,** for other heavy metals the differences were not that significant.

Average content of polycyclic aromatic hydrocarbons (PAH) in agricultural soils of the SR in the I. monitoring cycle was around 200 $\mu g.kg^{-1}$, which represents **reference values.** Values beyond 1000 $\mu g.kg^{-1}$ were only of local character (Žiar nad Hronom, Strážske, Danube and Morava river flats). In the III. monitoring cycle covering 274 agricultural hunts with the size of 15 802 ha, **no excessive limit pollutants (PAH, 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

Soil compaction

Based on the results of the PMS-S for the years 1993-2002, there was an improving tendency in physical soil properties. This also suggests less dramatic compaction of heavy and medium heavy arable soil types. In case of subsoil, greater proportion of compacted sites was found. Heavy soil types show higher rate of compaction over the whole soil profile.

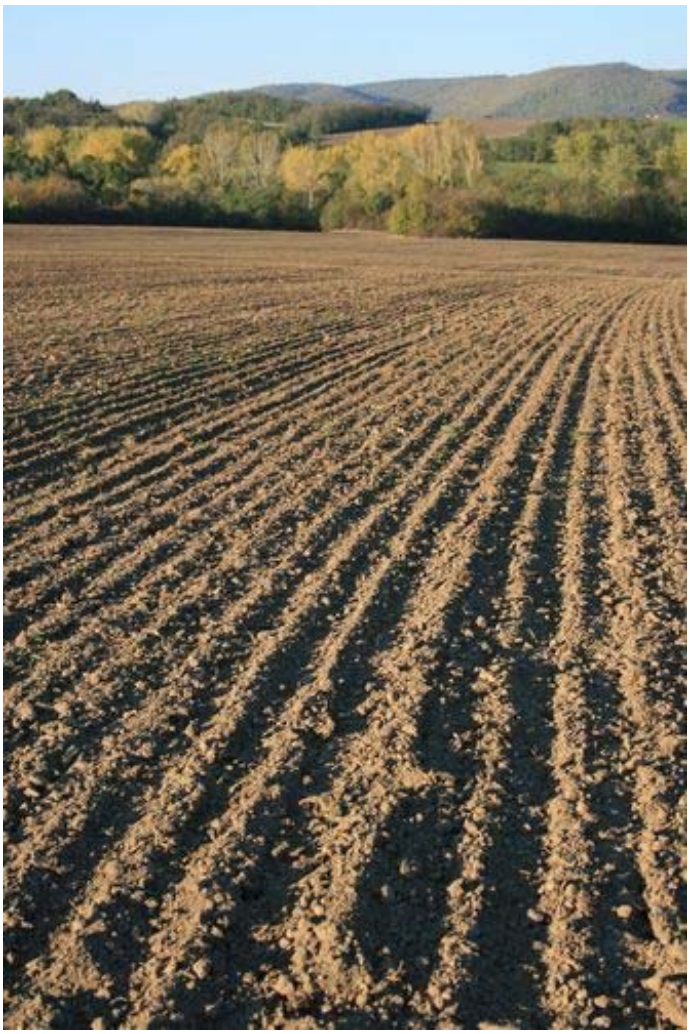
Desertification

Methodologically, recent soil monitoring process has shown the solution in its initial phase. Slightly observable phenomena have so far been recorded mainly in the south of Slovakia, in some monitored sites (e.g. slight increase in ground water mineralization).

Application of the sewage sludge and bottom sediments into the soil

Aplying the sewage sludge from waste water treatment plant to agricultural soil and forestland follows the provisions of the SR National Council Act 188/2003 Coll. on application of sewage sludge and river bed sediments to soil, **and on amendment to Act 223/2001 Coll. on waste and amendments to certain laws as amended.**

In 2006, the overall sludge production in the SR was 54 780 tons of dry matter, while **sludge was not applied directly to agricultural soil.**



*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

State of endangerment of plant taxons in 2006

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 endangered habitats** in Slovakia include: inland salt marshes and salt meadows, Carpathian travertine salt lakes, inland Pannonic sand dunes, alpine and sub-alpine grassland, alpine snow beds, xeric grassland and scrub vegetation on calcareous substrate with species of the *Orchideacae* family, active raised bogs, transition mires and quaking bogs, Calcareous fens with *Cladium mariscus* and species of the *Caricion davallianae,* alkaline fens, petrifying springs with tufa formation.

Comparison of the vascular plant endangerment* in selected countries (2004)

	Slovakia	Austria	Hungary	Poland	Czech Rep.
Vascular plants (%)	30.3	33.4	19.8	11.2	42.5

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.* as amended by Resolution 492/2006 Coll. Number of the **state protected taxons** is now **1 406** (vascular plants – 1 272; bryophytes – 47; higher fungi – 70; lichens – 17). There are **850 taxons** occurring in Slovakia (vascular plants – 713, bryophytes – 23, higher fungi – 70, lichens – 17).

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

There were processed and realized **rescue programmes** for the following species of vascular plants:

Rescue programmes (RP)	Vascular plants species
Processed in 2006	There were processed RP for 1 critically endangered species in 2006: *Pedicularis sceptrum-carolinum* (still not approved)
Realized in 2006	There were realized RP for the following species in 2006: *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, Carex pulicaris, Glaux maritima*

Source: SNC SR

Actual problem endangering the diversity of plant species in last years has been becoming **invasive species**. In 2006, **elimination** of invasive plant species was carried out at 52 sites in protected areas of the size of almost 80 ha. This activity followed up on the measures implemented also in the previous years. 18 species of introduced and invasive plant species were thus eliminated. Outside the protected areas, eliminated were 7 species of invasive plants at 58 sites of the size of 50 ha.

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

State of endangerment of the particular invertebrate taxons in 2006

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	45	-	422	45.2
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	490	81	2	-	718	11.1
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

* without the category of NE

State of endangerment of the particular vertebrate taxons in 2006

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 (%) (2004)

	Slovakia	Austria	Hungary	Poland	Czech Rep.	EU*
Invertebrates	5.3	-	> 0.9	5.6	0.3	13.9
Pisces	24.1	41.7	32.1	14.5	29.2	38.1
Amphibians	44.4	100.0	100.0	-	90.0	46.7
Reptiles	38.5	75.0	100.0	33.3	100.0	85.7
Birds	14.4	26.0	18.8	14.5	55.9	100.0
Mammals	22.2	22.0	71.1	15.7	33.3	82.4

Source: OECD

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

* proportion of globally endangered species according to IUCN, included in the European instruments (EU directives, Bern convention)

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.

♦ 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** is now **808 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 (2006)

	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 2006 were realized for the following taxons: *Marmota marmota*, *Lutra lutra*, *Aquila chrysaetos*, *Aquila pomarina*, *Falco cherrug*, *Falco peregrinus*, *Crex crex*, *Emys orbicularis*, *Paranssius apollo* and *Umbra krameri.*

In **breeding** and **rehabilitation stations** operated by the nature and landscape protection organizations (including ZOO Bratislava and ZOO Bojnice) there were **adopted** in 2006 altogether **589** injured

individuals or otherwise disabled animals. Back to wild nature there were **released** altogether **351** individuals and there was spent more than 420 thous. SKK.

There was provided **the guarding** of 75 nests of 6 bird of prey species (*Aquila heliaca, Aquila chrysaetos, Aquila pomarina, Haliaeetus albicilla, Falco peregrinus, Falco vespertinus*) - information only for the organization organs of SNC SR. There were successfully **brought up** 104 nestlings, which is in average 1.4 brought up nestlings per nest and there were **spent** about 300.4 thous. SKK.

In term of in situ animal preservation in 2006 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 – *Spermophillus citellus, Bison bonasus, Castor fiber, Amphibia* and there was **spent** altogether 204 thous. SKK.

Within the **improvement of nesting and living conditions** of animals, there were realized 1 332 actions, while there was invested more than 700 thous. SKK.

In concern of preventing the collisions of **migrating Amphibians** with the car transport, **over 23 kilometres of barriers** in total were build in 2006, with investment of about 180 thous. SKK.

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

To 31st March 2006, the **spring stock numbers** of the ungulate game species, without Fallow deer species, were higher in comparison to the previous year. Hunting for the rare animal species is strictly regulated.

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

Species	2003		2004		2005		2006	
	stock	hunting	stock	hunting	stock	hunting	stock	hunting
Deer	38 030	13 064	38 264	13 118	39 738	14 030	41 105	12 888
Fallow deer	7 501	2 109	7 475	2 011	8 425	2 529	8 010	2 208
Roe deer	83 756	20 770	84 547	20 269	85 124	20 659	87 324	17 313
Wild boar	28 779	21 118	27 415	23 727	27 116	22 551	27 175	17 820
Brown hare	219 450	28 144	201 316	31 842	199 226	36 511	208 946	17 560
Grey partridge	22 594	1 042	18 622	832	17 293	484	15 579	10
Pheasant	204 856	115 598	180 105	116 050	181 374	143 373	187 139	110 113
Chamois	553	8	522	7	625	12	665	8
Bear	1 318	13	1 419	34	1 483	35	1 577	16
Wolf	973	112	1 158	86	1 165	74	1 219	91
Otter	304	0	315	0	343	0	380	0

Source: SO SR

Amount of the fish **caught** in the fish ponds, water dams and water flows for economic and sport purposes achieved **2 979 t** in 2006. The waters were **stocked** by **41 327 114 pieces of setting**.

Fishing for the economic and sport purposes in 2006 (t)

Fish species	2003		2004		2005		2006	
	total	of this SFA*	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	**2 979**	1 697
Carp	1 186	1 040	1 360	988	1 281	1 092	1 597	1 169
Trouts	743	50	878	52	800	49	837	49
Crucians	101	71	80	75	76	71	117	71
White amur	36	34	28	28	33	24	39	33
Bighead carps	10	4	8	5	12	6	12	4
Sheat fish	36	35	36	35	37	35	34	33
Maskalonge	59	56	66	60	74	67	62	60
Sand-eel	78	78	78	76	83	82	65	64
Grayling	12	12	9	8	13	7	8	7
Huchen	1	1	1	1	1	1	1	1
Breams	99	98	98	98	106	105	95	94
Torgoch	1	0	0	0	9	1	2	1
Chevins	27	27	21	21	16	16	16	16
Other fish species	139	125	120	117	111	107	94	95

*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).

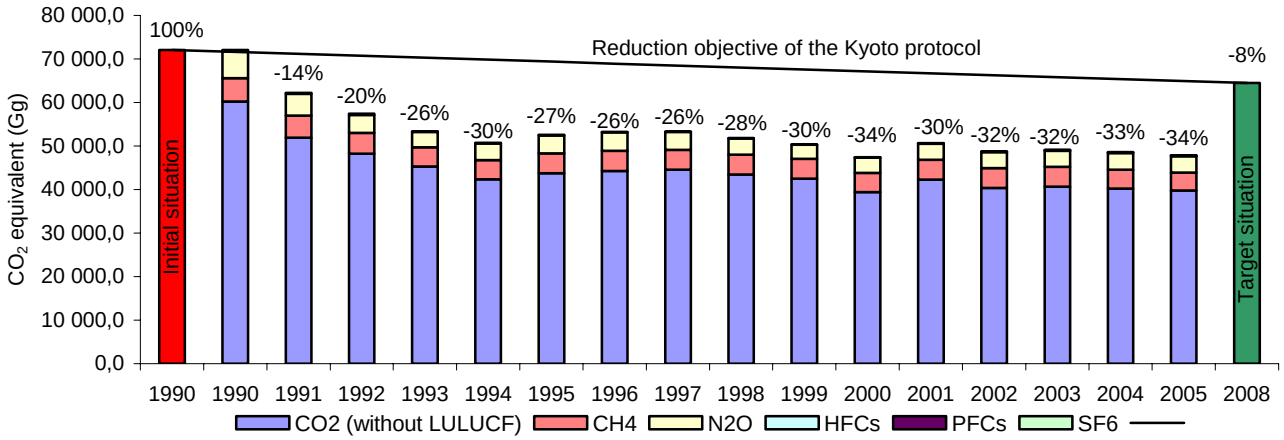
Special attention is given to characteristics of climate variability, especially **precipitation balances.** Over the last 7 years, there was a significant increase in the occurrence of extreme daily precipitation figures, which consequently produced a significant increase in local floods in various 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 2005, total anthropogenic CO_2 emissions, without deducting detections in the LULUCF sector (Land use, land use change and forestry), reached the value of 39 757.23 Gg. Sink of carbon dioxide in forest ecosystems in 2005 was 849.56 Gg (appr. 2 388.48 Gg in 1990). Total CH_4 emissions in 2005 reached the value of 198.92 Gg (257.49 Gg in 1990), while total NO_2 emissions in the same year reached 12.09 Gg (19.90 Gg in 1990). Anthropogenic emissions of greenhouse gases reached their highest level in the late 80-ties, while in 2005 their levels dropped by 34 %, 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 2005, CO_2 emissions represent more than 83 %, CH_4 emissions are on the level of 9 %, while N_2O emissions contribute by approximately 8 %, 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

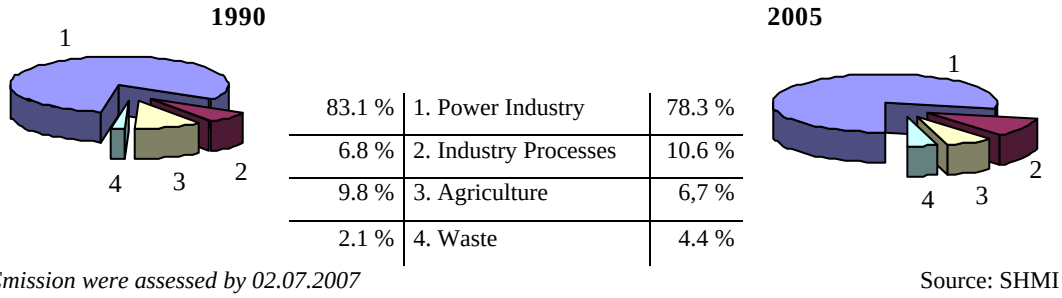
and reduced numbers of livestock. Industrial processes and waste noticed in 2005 accumulation share of greenhouses gases emissions.

Aggregated emissions of greenhouse gases (Tg) in CO_2 equivalents

Tg (CO_2 equivalent)	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
Net CO_2	41.02	39.01	41.02	41.83	43.13	41.52	40.83	36.98	37.07	35.10	35.81	35.99	38.88
CO_2*	45.30	42.33	43.72	44.25	44.53	43.46	42.47	39.38	42.29	40.35	40.65	40.24	39.76
CH_4	4.42	4.44	4.63	4.69	4.62	4.60	4.58	4.48	4.55	4.61	4.58	4.37	4.18
N_2O	3.52	3.86	4.07	4.20	4.10	3.70	3.25	3.50	3.71	3.67	3.71	3.81	3.74
HFCs, PFCs, SF_6	0.16	0.14	0.15	0.08	0.11	0.08	0.09	0.10	0.11	0.13	0.17	0.19	0.21
Total (with CO_2)	49.11	47.45	49.86	50.80	51.96	49.90	48.75	45.06	45.44	43.51	44.27	44.36	47.02
Total*	**53.38**	**50.76**	**52.55**	**53.21**	**53.35**	**51.82**	**50.37**	**47.45**	**50.65**	**48.74**	**49.08**	**48.59**	**47.87**

Emission were assessed by 02.07.2007 Source: SHMI
The table shows calculated years 1990-2004
** 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		2005
83.1 %	1. Power Industry	78.3 %
6.8 %	2. Industry Processes	10.6 %
9.8 %	3. Agriculture	6,7 %
2.1 %	4. Waste	4.4 %

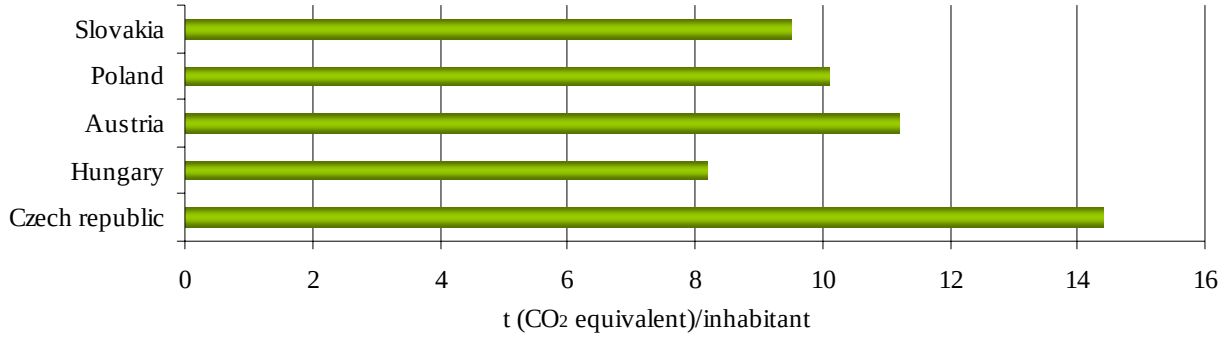
Emission were assessed by 02.07.2007 Source: SHMI

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

	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
Power Industry*	44.37	41.31	42.60	43.19	43.39	41.66	40.56	37.82	40,64	38.55	39.03	37.81	37.40
Industry Processes**	3.24	3.78	4.05	4.16	4.21	4.70	4.51	4.24	4.48	4.43	4.36	5.29	5.06
Using solvents	NE	NE	NE	NE	NE	0.01	0.01	0.01	0.03	0.06	0.06	0.08	0.07
Agriculture	4.39	4.22	4.39	4.22	4.02	3.71	3.47	3.48	3.53	3.55	3.41	3.23	3.22
LULUCF	-4.27	-3.31	-2.68	-2.41	-1.39	-1.93	-1.62	-2.39	-5.21	-5.23	-4.81	-4.23	-0.85
Waste	1.38	1.44	1.51	1.65	1.72	1.76	1.83	1.90	1.97	2.16	2.22	2.19	2.11

Emission were assessed by 02.07.2007 Source: SHMI
The table shows calculated years 1990-2004
** Including the traffic*
*** Including the F-gases*

Emissions of greenhouse gases on inhabitant in Slovakia and in other countries in the year 2004



Source: EEA

*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

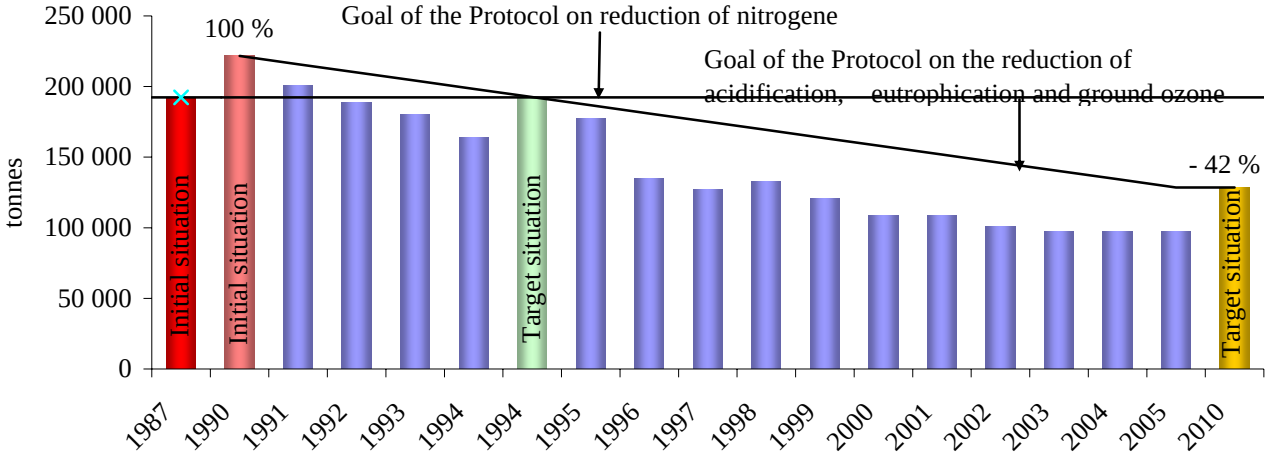
Year	1980 (initial year)	2000	2005	2010
SO_2 emission (thous. t)	843	337	295	240
SO_2 emission reduction (%)	100	60	65	72

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 123.88 thousand tons, which is 85 % less than in the years 1980. In 2005 it was 89 thousand tons, which is 89.4 % less then in the year 1980.

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

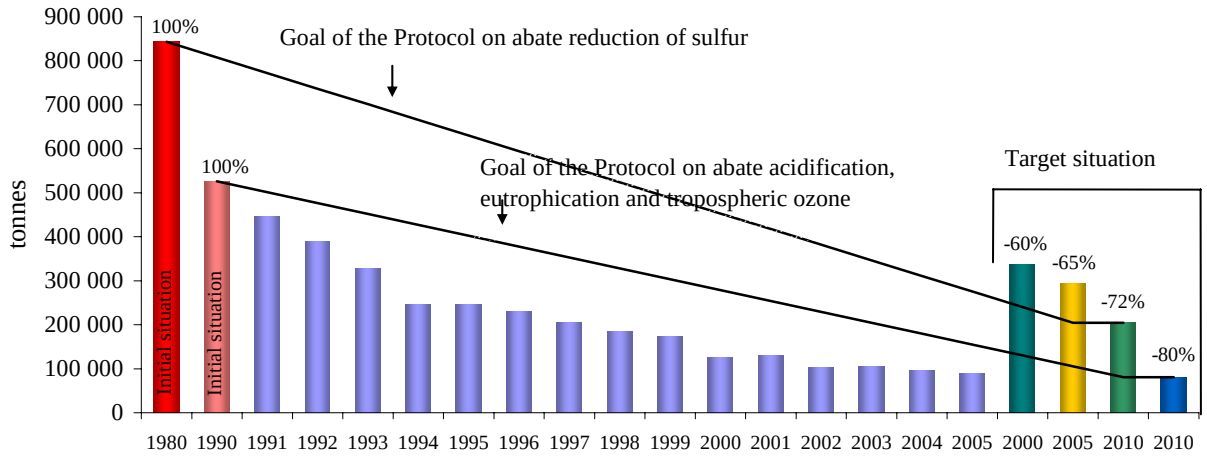
The protocol was signed in Göteborg in 1999. Slovakia signed the protocol in 1999 and ratified in 2005. Slovakia obliged itself to reduce the SO_2 emissions by 2010 by 80 %, the NO_2 emissions by 2010 by 42 %, the NH_3 emissions by 2010 by 37 % and the VOC emissions by 2010 by 6 % in comparison to the year 1990. Slovakia has the potential to fulfill this obligation.

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



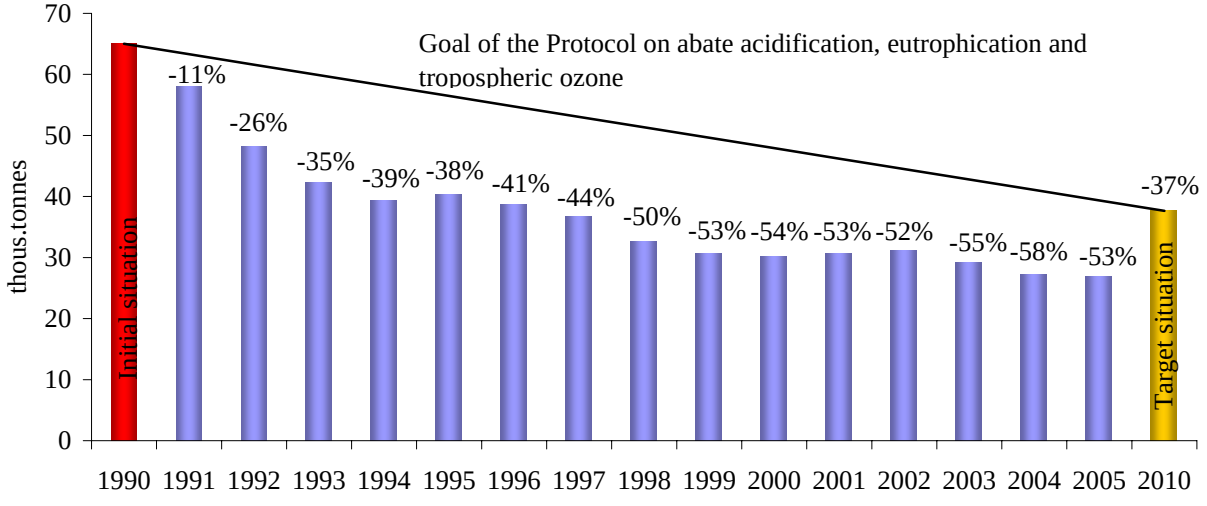
Source: SHMI

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

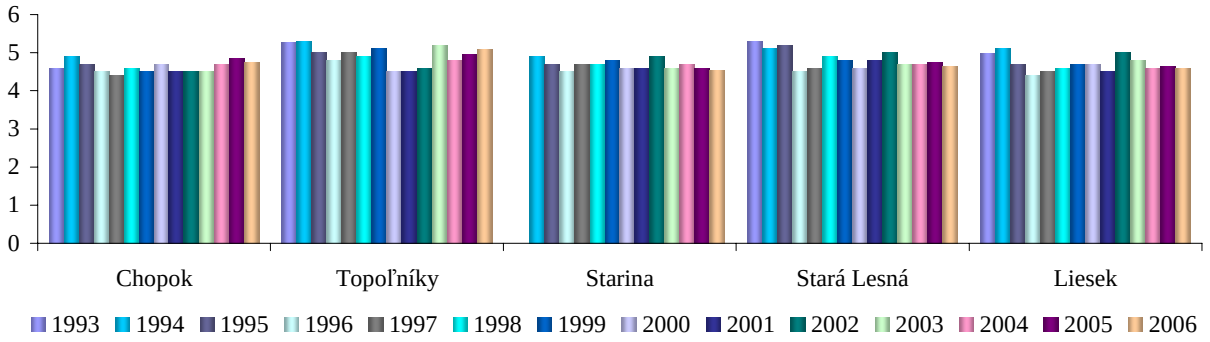
During the period of the years 1990-2005 in case of SO_2 and HN_3 the recorded reduction in emissions was obvious (with slight deviations in some years). Nitrogen oxides emissions showed a slight decrease only in 1995 and 1998 their increase was caused by increased natural gas consumption by retail consumers.

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.

In 2006, total **atmopheric precipitations** at regional stations were between 456 and 908 mm. Acidity of atmopheric precipitations was dominant at Starina and Liesek, copying the lower limit of the pH scale, 4.52 – 5.08. Time sequence and pH trend over a longer time period show a reduced acidity. pH values well correspond with the pH values by the EMEP maps.

Trend of pH precipitation



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. The overall reduction in sulfate concentrations over a long period corresponds to the reduction of SO_2 emissions since 1980.

Nitrates that show less influence on the acidity of precipitations than sulfates showed the concentration interval of 0.25 - 0.40 mg $N.l^{-1}$.

Lead concentrations in atmospheric precipitations were between 2.24 µg/l (Stará Lesná) and 3.60 µg/l (Chopok). With the exception of Starina, lead values at all other stations were higher, compared to 2005. The greatest difference was recorded at Chopok.

Cadmium concentrations were between 0.09 µg/l (Topoľčianky and Starina) and 0.22 µg/l (Stará Lesná). Compared to 2005, just like in lead, values for cadmium were higher at all stations, with the exception of Starina.

Zinc is the most frequnt of all monitored metals. It showed greater concentrations at all regional SR stations than in the previous year. Greatest increment was at Chopok – 1.7 times more (similar to Bratislava – Jesséniova (reference station) with 1.6 times).

When compared with different stationsm, **nickel** and **arsenic** showed the greatest increase at Chopok. **Chromium** contentrations at Chopok were very close to those for the years 2003-2005; however, in 2006 there was a significant increase.

Copper content increased the most at Liesek, with the same concentration as in the previous year shown at other stations including Starina

Lead and **cadmium** in precipitations represent metals of the highest quality. It has not been possible to assess them in a more complex way due to the short time span, just like the other mentioned metals monitored since 2002.

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

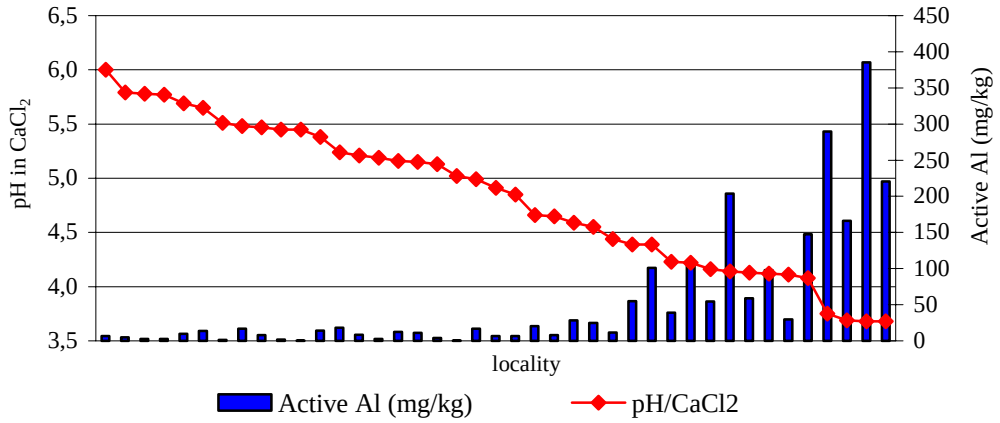
Acidification as a process of raising the soil's acidity represents one of the important processes of chemical degradation. Ability of the agro-ecosystem to cope with natural and anthropogenic acidification is defined by the capacity and potential of the buffering function of the soil. This reflects a degree of soil resistance to acidification.

Partial Monitoring System – Soil, provides information on the state and development of acidification of agricultural soil. pH value of soil as well as the state of active aluminium are monitored within the monitoring process.

Outcomes from the Partial Monitoring System - Soil (PMS-S) showed that during 1993 through 1997 there were statistically negligible changes and stabilisation processes in soil acidification. 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 fluvisols, cambisols, podsols, rankers, and lithomorphic soils.

Content of active aluminium was in negative correlation with soil reaction values. The chart shows its content growing significantly with reduction in soil reaction.

pH values in CaCl2 in relation to the active aluminium content in selected SR soils within the III. monitoring PMS - S cycle



Source: SSCRI

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 µg.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 2006 were only slightly below the record-breaking values in 2003. Average annual concentrations of ground ozone in Slovakia in contaminated urban and industrial locations in 2006 were within the interval of 36-66 µg.m^{-3}. Greatest average annual ground ozone concentrations in 2006 were recorded at the Chopok station (96 µg.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 µg.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. The following table shows the summary of exceeding values measured over the period of 2004-2006. Concentrations exceeding the public alarm threshold value (240 µg.m^{-3}) were no recorded in 2006. Ten stations recorded figures that exceeded the information threshold (180 µg.m^{-3}) - most (19) in Bratislava (Jeséniova).

Number of days with exceeded target value for protection of public health – 2004, 2005, 2006, average for 2004-2006 (target value of permitted number of exceeding values for the year 2010 is the average of 25 days for three years)

Station	2004	2005	2006	Averaged in 2004-2006
Banská Bystrica, Nám. slobody	11	28	30	23
Bratislava, Jeséniova	28	52	50	43
Bratislava, Mamateyova	15	42	34	30
Gánovce, Meteo. st.	7	29	39	25
Hnúšťa, Jesenského	10	19	21	17
Humenné, Nám. slobody	10	41	35	29
Chopok, EMEP	58	77	**53	63
Jelšava, Jesenského	12	13	31	19
Kojšovská hoľa	42	59	63	55
Košice, Ďumbierska	*20*	33	**0	27
Liesek, Meteo. st., EMEP	**6	**35	40	38
Prešov, Solivarská	*3*	18	19	13
Prievidza, J. Hollého	*7*	12	18	12
Ružomberok, Riadok	*1*	23	***1	12
Stará Lesná, AÚ SAV, EMEP	*8*	30	44	27
Starina, Vodná nádrž, EMEP	*12*	39	**27	26
Štrbské Pleso, Helios	*6*	**27	42	25
Topoľníky, Aszód, EMEP	*27*	47	41	38
Trenčín, Janka Kráľa	*	22	22	22
Veľká Ida, Letná	*0*	4	***0	2
Žiar nad Hronom, Dukelských hrdinov	*23*	39	**0	31
Žilina, Obežná	*7*	19	30	19

measurement introduced later ** 50-75% of valid measurements * less than 50% of valid measurements* 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). Average values for the years 2002-2006 were exceeded at all reference urban and rural stations, with the exception of Prešov, Prievidza, Ružomberok, Stará Lesná, and Veľká Ida.

Values for the AOT40 for vegetation protection - the year 2006 and for the averaged period of 2002-2006 (target AOT value for the year 2010 is 18 000 µg.m^{-3}.h for 5 years on average)

Station	Averaged in 2002-2006	2006
Bratislava, Jeséniova	25 182	32 180
Bratislava, Mamateyova	19 908	23 968
Gánovce, Meteo. st.	23 386	25 550
Hnúšťa, Jesenského	19 186	17 078
Humenné, Nám. slobody	21 242	26 739
Chopok, EMEP	32 015	33 118
Jelšava, Jesenského	20 303	22 732
Kojšovská hoľa	26 818	31 802
Košice, Ďumbierska	*22 959	-
Liesek, Meteo. st., EMEP	19 075	24 569
Prešov, Solivarská	16 567	16 282
Prievidza, J. Hollého	13 812	15 044
Ružomberok, Riadok	*11 348	-
Stará Lesná, AÚ SAV, EMEP	17 148	25 258

Starina, Vodná nádrž, EMEP	18 118	29 171
Štrbské Pleso, Helios	27 055	30 298
Topoľníky, Aszód, EMEP	21 284	27 430
Trenčín, Janka Kráľa	18 098	19 778
Veľká Ida, Letná	*7 215	-
Žiar nad Hronom, Dukelských hrdinov	*20 160	-
Žilina, Obežná	18 536	26 498

* *data from the year 2006 were not incuded in calculating the average, since the station did not measure in the summer - did not measure during the monitored period*

Source: SHMI

The reference AOT40 value for the protection of forests for annual reporting to EC is 20 000 $\mu g.m^{-3}.h$, and is valid for urban, rural and rural reference stations. These stations show values that are exceeded every year, at some stations during the photochemical active years, the values are exceeded more than three times as much.

*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.

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. In 2002, Act 408/2000 Coll. was adopted, which amends Act 76/1998 Coll. on the Earth's ozone layer protection and on amendment to Act 455/1991 Coll. on small business (Small Business Act) as amended, which transposed the decisive majority of responsibilities stipulated under the European Parliament and Commission Directive 2 037/2000 EC and banned the production of brom-chloro-methane, creating conditions for ratification of the **Beijing Annex** of the Montreal Protocol. (for Slovakia effective as from August 20, 2002).

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 1992-2006 (tons)

Group of substances	1986/89	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
AI - freons	1 710.5	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	0.29
A II - halons	8.1	-	-	-	-	-	-	-	-	-	-	-	-	-
BI* - freons	0.1	-	-	-	-	-	-	-	-	-	-	-	-	-
B II* - CCl4	91	315.4	0,6	-	0.16[1)]	0.07	0.08	0.022	0.03	0.01	0.009	0.047	0.258	0.045
BIII* - 1,1,1 trichloroethane	200.1	136.7	69,4	-	0.11[1)]	-	-	-	-	-	-	-	-	-
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	43.94
C II - HBFC22B1	-	-	-	14.30	-	-	-	-	-	-	-	-	-	-
E** - CH_3Br	10.0	-	-	9.60	5.60	10.20	-	-	0.48	0.48	0.48	0.48	-	-
Total	2 019.5	717.5	449,2	86.10	61.81	102.50	46.69	66.82	71.4	72.986	54.21	39.7	49.78	44.28

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 2006 (tons)

Usage	Group of substances							
	AI	A II	BI	B II	BIII	C I	C II	E
Coolant	-	-	-	-	-	43.94	-	-
Fire extinguishers	-	-	-	-	-	-	-	-
Isolating gases	-	-	-	-	-	-	-	-
Detection gases, diluents, detergents	0.29	-	-	0.045	-	-	-	-
Aerosols	-	-	-	-	-	-	-	-
Swelling agents	-	-	-	-	-	-	-	-
Sterilizers, sterile mixtures	-	-	-	-	-	-	-	-

Source: MoE SR

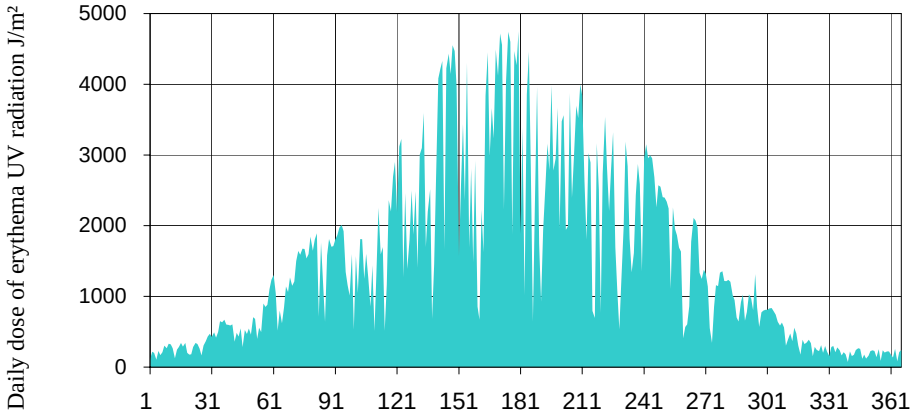
Total atmospheric ozone and ultraviolet radiation

The average annual value of total atmospheric ozone in 2006 was 324.2 Dobson units (D.U.), 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.

Long-term average for 1994-2006 was 326.5 D.U. Over this period, the year 2006 was among the average years, with the annual average lower 5 times (1995, 1996, 1997, 2000, and 2004) and higher 7 times.

Average monthly deviation was positive only in February, while the Novembre average reached the level of the long-term normal values. Average loss in total ozone over six months was 6% and more. Greatest negative deviation of -9% was recorded in December. Winters months are typical for great ozone variability. Frequently changing significant positive or negative deviations depend on dominant climate conditions.

Annual characteristics in daily doses of harmful ultraviolet solar radiation – Gánovce 2006



Source: SHMI

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-NH_4, N-NO_3, N-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. Assessing the whole **C - nutrients** group and comparing it with previous time period, there have not been major changes. Acceptable surface water quality that meets group II. and III. criteria for the years 2005-2006 was around 68 %. Total nitrogen and phosphorus concentrations in surface water in selected water courses did not exceed the limit values defined by the Government Ordinance. Values for the chlorophyl “a” indicator were exceeded at Malý Dunaj, with the maximum recorded value reaching 82.9 $\mu g.l^{-1}$, and at the Nitra river, with the recorded value of 88.8 $\mu g.l^{-1}$.

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,

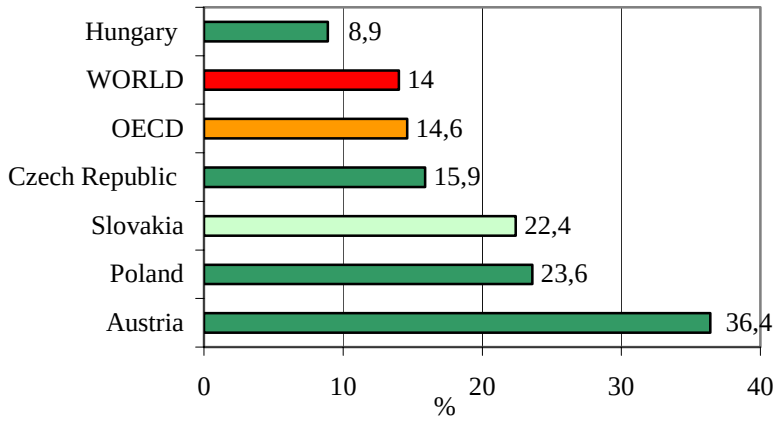
- *cave and cave protective zone,*
- *natural waterfall and protective zone of the natural waterfall,*
- *special protection area (SPA)*

In 2006, 4 new protected areas **were declared** (1 PS, 1 NR and 2 SPA) and 2 cave protective zones. **Updated** were 2 National Nature Reserves – including one also with zonation and 1 Nature Reserve – also with zonation. 12 protected areas were **cancelled** (including 10 PS and 2 NM).

Tourist guidelines were published for 5 national parks - Slovenský raj, Poloniny, Muránska planina, Pieniny and Slovenský kras; besides, a policy on regulation of visitors for Malá Fatra published back in 2005 came into force.

In 2006, protection level from 5th level to 4th level was decreased for 4 protected areas (2 NR and 2 NM) through regional generally binding resolutions.

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



Source: OECD

Protected areas in the Slovak Republic (state to 31st December 2006)

Category	Number	Designated size of protected area (ha)	Designated size of protective zone (ha)	% of SR territory
Protected landscape areas	14	522 579	-	10.66
National parks	9	317 890	270 128	6.48 + 5.51
NP + PLA together	**23 1 110 597 ha**	**840 469**	**270 128**	**22.65**
Protected sites	170	5 444	2 146	0.15
Nature reserves	384	12 869	254	0.27
Private nature reserves	2	52	0	0
National nature reserves	219	83 739	2 663	1.76

Nature monuments	228	1 539	237	0.04
National nature monuments	60	59	1 311	0.03
Total SSPA*	**1 061 110 263 ha**	**103 651**	**6 612**	**2.25**

* SSPA – small-size protected areas Source: SNC SR

In total, **in the territory of PLA** there are **243 small-size** protected areas (SSPA) with total size (together with protective zones) of 12 502.9943 ha (this represents 2.4 % **of total PLA territory**), while **in the territory of NP and their protective zones** (PZ) there are **265** SSPA with total size (including PZ) of 73 065.3484 ha (**12.43 %** of the NP area and their PZs). **Outside PLA, NP, and NP PZ**, which means **the open landscape**, there are **553** small-size protection areas with the size (together with PZ) of 24 695.4154 ha (**22.4 %** of total SSPA and SSPA PZ) and 0.65 % of theopen landscape area.

Further, there are **5** declared **special protection areas** with total size of 144 686.89 ha (part of them overlaps with other protected areas).

♦ **Endangerment and degradation of the protected areas**

The condition of protected areas ranked into the 3th - 5th level of protection and protected trees is evaluated in 3 endangerment categories. Of the total number of 1 061 small-size protected areas in the 3th - 5th level of protection, there were **degraded** 33 territories of area of 246 ha (this area presents 0.2 % of total area of SSPA), 454 **endangered** (21 % of area) and in the **optimal condition** there were 574 territories (78.8 % of area).

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

Category	Condition to 31st December 2006		Optimal		Endangered		Degraded	
	number	area (ha)	number	area (ha)	number	area (ha)	number	area (ha)
PS	170	7 590	51	4 300	102	3 236	17	55
NR	384	13 123	214	8 900	162	4 068	8	155
NNR	219	86 403	149	71 566	70	14 837	-	-
NM	228	1 777	110	848	110	893	8	36
NNM	60	1 370	50	1 300	10	70	-	-
Total	**1 061**	**110 263**	**574**	**86 914**	**454**	**23 104**	**33**	**246**

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 **70 inventory researches** in 2006, including 32 zoological, 37 botanical, and 1 hydrogeological.

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 over 6 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 and other).

During the year 2006 State nature conservancy of the SR (SNC SR) elaborated 8 291 **nature and**

landscape impact proposals. The biggest rate was created by the building and regional planning activities (25.41 %), department of tree species protection (20.6 %) and forestry (11.9 %). Viewpoints relating to species protection of the plants and animals created 9.8 %, territorial protection 5.7 %, inorganic nature 4.8 %, agriculture 4.0 % and water management 3.1 % of all viewpoints.

Within the organisation units of State Nature Conservancy of the SR, in 2006 maintenance of **33 educational paths (EP)** and **16 educational localities (EL)** were realized, including the reconstruction of 4 EP and 9 new EL were opened. **12 information centres of nature protection** (other 2 in reconstruction) and the **Nature Protection School** in Varín were administered.

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	16
	area (km^2)	382	419	905	1 541	1 373

Source: UNESCO-MaB, Ramsar Convention Bureau - in OECD Compendium 2004

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**

- **Sites of Community Importance** (SCI) are proposed for **44 plant**, **96 animal species** and **66 types of biotopes**.

Into the **proposed list** of the SCI 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.

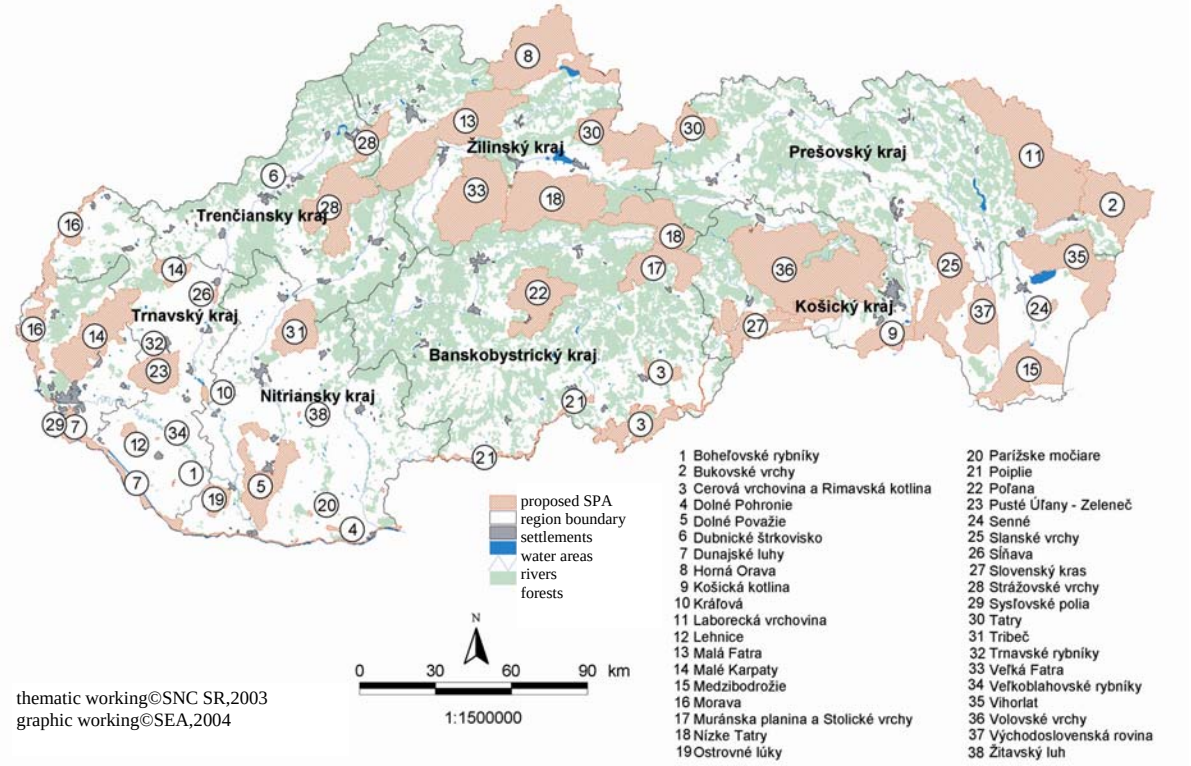
In 2005, there were negotiations with the European Commission, subsequently Slovakia currently undergoes a revision of the national list of those biotopes and species that were considered insufficiently documented.

- Special Protection Areas (SPA) - national list of pSPA includes **38 SPA** with total area of **1 236 545 ha** and covers **25.2 % 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 2006,

there **were declared 5 SPAs** by a single resolution: **Horná Orava, Malé Karpaty, Lehnice, Sysľovské polia and Dolné Považie**.

Approved proposal of the special protection areas



Source: SNC SR

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 (2006)

Country	SPA			SCI		
	number	area (km²)	% of country area	number	area (km²)	% of country area
Austria	94	9 275.5	11.1	164	8 884	10.6
Czech rep.	38	6 936.2	8.8	841	7 241	9.2
Hungary	55	13 519.1	14.5	467	13 929	15.0
Poland	72	33 156.3	7.8	192	13 124	4.2
Slovakia	38	12 294.8	25.2	382	5 739	11.7
EU-25	**4 540**	**444 368.0**	**9.6**	**20 789**	**559 082**	**12.2**

Source: SNC SR

Protected trees

The network of protected trees in 2006 was created by 478 protected trees and their groups including alleys (protected objects). Physically it is represented by 1 320 solitary trees of 70 taxons,

including 33 domestic and 37 alien taxons.

There were 309 in the **optimal** state (65 %), 136 were **endangered** (28 %) and 33 **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

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

Categorization of immovable NCM*	Number of cultural monuments						
	2000	2001	2002	2003	2004	2005	2006
Architectural monuments	7 515	7 549	7 612	7 650	7 709	7 738	7 799
Archaeological monuments	340	342	343	351	354	360	368
Historical monuments	1 397	1 398	1 410	1 373	1 405	1 386	1 382
Historical gardens and parks	333	335	337	339	339	340	341
Folk architecture monuments	1 821	1 821	1 812	1 784	1 837	1 833	1 823
Technical monuments	451	458	462	451	449	454	484
Art work monuments	818	819	943	947	977	1 005	1 015
Total	**12 675**	**12 722**	**12 919**	**12 895**	**13 070**	**13 116**	**13 212**

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

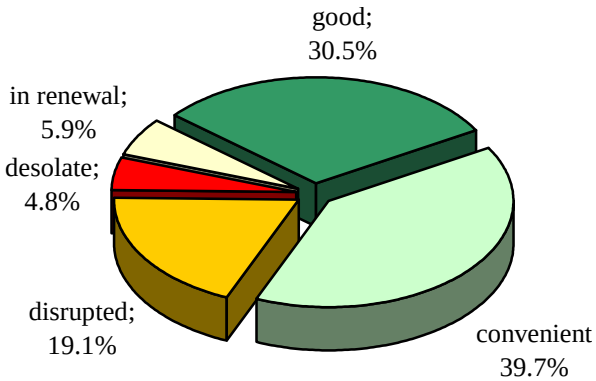
To 31st December 2006, there were 9 525 **immovable national cultural monuments** in Slovakia consisting of **13 212 monument buildings** and **14 437 movable national cultural monuments** (98 % of it has sacral character), which consist of **30 410** cultural articles.

Trend in the number of movable national culture monuments

	1993	2000	2002	2004	2006
Movable NCM	14 687	14 582	14 355	14 363	14 437

Source: MB SR

Construction-technical state of immovable NCM in 2006



Source: MB SR

Trend in the **ownership form** of cultural monuments (CM) in 2006 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 2005-2006 it dropped sharply by 5 % - to 9.2 %. This was the result of the state property delimitation to municipalities and VÚC (upper-tier self-governing units).

In terms of the **construction and technical state,** the year 2006 followed the trend in development since 1993. There is a gradual decrease in the percentage of the "good" state, from 34 % in 1993 went down to 30.5 % in 2006. On the other hand, the percentage of endangered monuments that are disrupted or desolate is also decreasing (from 27 % in 1993 to 23.9 % in 2006). This means that the **state of the majority of monuments moved under the category of convenient,** from 33 % to 39.7 %. When added to the monuments in good state, it is 70.2 % of monument fund that is in satisfactory state.

Preservation of monuments in SR is provided by **Act No. 49/2002 Coll. on the protection of monuments and historic sites**.

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

Historical settlement structures in the Slovak republic (2006)

Historical settlement structures (HSS)	Total number of HSS
Town reserves	18
Folk architecture reserves	10
Historical preserved parks	340
Monument zones	85

Source: MB SR

Town reserves

Historical settlement structures		
Town reserves	**Proclamation**	**Number of CM**
1. Banská Bystrica	18.5.1955	200
2. Banská Štiavnica	11.6.1950	191
3. Bardejov	11.6.1950	131
4. Bratislava	5.10.1954	264
5. Kežmarok	11.6.1950	256
6. Košice	2.2.1983	500
7. Kremnica	11.6.1950	116
8. Levoča	11.6.1950	339
9. Nitra	21.1.1981	23
10. Podolínec	11.6.1991	63
11. Prešov	11.6.1950	257
12. Spišská Kapitula	11.6.1950	24
13. Poprad - Sp. Sobota	11.6.1950	89
14. Svätý Jur	23.5.1990	26
15. Štiavnické Bane	15.8.1995	20
16. Trenčín	11.9.1987	112
17. Trnava	11.9.1987	139
18. Žilina	11.9.1987	58

Source: MB SR

Folk architecture reserves

Historical settlement structures		
Folk architecture reserves	**Proclamation**	**Number of CM**
1. Brhlovce	14. 9. 1983	25
2. Čičmany	26. 1. 1977	36
3. Osturňa	3. 10. 1981	135
4. Plavecký Peter	23. 5. 1990	28
5. Podbiel	14. 9. 1977	56
6. Sebechleby	21. 1. 1981	89
7. Špania Dolina	10. 1. 1979	83
8. Veľké Leváre	21. 1. 1981	25
9. Vlkolínec	26. 1. 1977	73
10. Ždiar	14. 9. 1977	183

Source: MB SR

Restoration of cultural monuments

In 2006, there was 116 335 thous. SKK in contributions by the MoC SR to the restoration of national cultural monuments in the SR within **513 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	2006
Number of projects	160	920	323	513
Total funding (thousands SKK)	24 000	118 380	94 648	116 335 000

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 2006, the **World Heritage List** contained **851** sites (including 660 cultural, 166 natural, and 23 mixed) from **141** signatory countries to the *Convention concerning the protection of World culture and natural heritage*, **five** of them from the Slovak territory. These are:

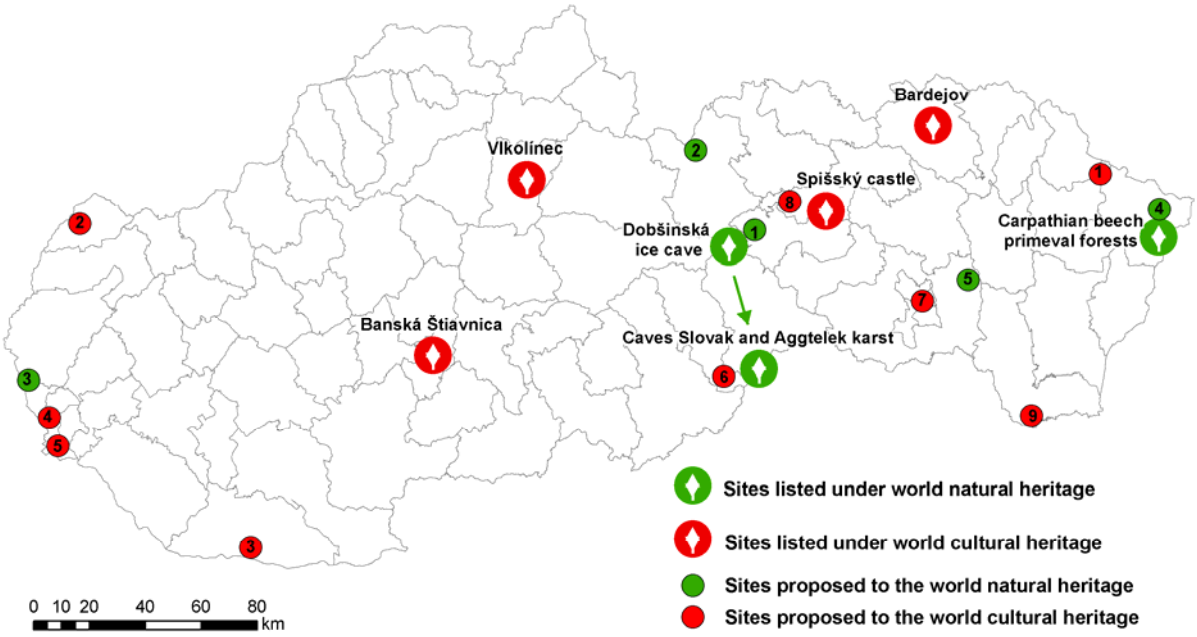
Under cultural heritage:

- **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: SEA

Comparison of the number of World Heritage sites (WH) with the surrounding countries to 2006

Country	Number of WH sites
Slovakia	5
Czech republic	12
Poland	13
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** to 2006 include:

Under cultural heritage

1. **Wooden sacral architecture in the Carpathians** (planned common proposal with Poland, Hungary, and Ukraine),
2. **Great Moravian settlements:** Slavic fortification complex in Mikulčice and the St. Margaret Church in Kopčany,
3. **Komárno – fortification against the Turks** (together with Hungary),
4. **Monument to Chatam Sófer** in Bratislava,
5. **Limes Romanus – Roman monuments on the middle Danube** (together with Austria, Hungary, in Slovakia only Iža and Rusovce),

6. **Gemer and Abov churches with medieval wall paintings** (planned project 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),
9. **Tokay vineyard area** (Černov, Veľká Tàňa, Malá Tàňa, Slovenské Nové Mesto, Černochov, Bara, Viničky; inclusion into the Tokay vineyard area in Hungary).

Under nature heritage

1. **Karst valleys of the West Carpathians** (addition to the proposal on the Slovak Paradise gorge),
2. **Nature reserves of the Tatras** (together with Poland),
3. **Nature and cultural landscape in the sub-Danubian region** (anticipated common proposal with the Czech Republic),
4. **Mycoflora of the Bukovské hills,**
5. **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 4 457 inhabitants, mainly due to immigration. As of December 31, 2006, population count in the Slovak Republic reached the number of **5 393 637**. 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).

Basic data about the migration of population in the SR (2006)

Territory	Live births	Dead	Natural increment (loss)	Migration increment (loss)	Total increment (loss)	Number of inhabitants (to 31st December 2006)
Bratislavský region	5 921	5 853	68	2 986	3 054	606 753
Trnavský region	5 059	5 604	-545	1 448	903	555 075
Trenčiansky region	5 075	5 875	-800	261	-539	599 847
Nitriansky region	6 024	7 992	-1 968	775	-1 193	707 305
Žilinský region	6 980	6 623	357	206	563	695 326
Banskobystrický region	6 215	7 158	-943	-414	-1 357	655 762
Prešovský region	9 576	6 813	2 763	-876	1 887	800 483
Košický region	9 054	7 383	1 671	-532	1 139	773 086
Slovak Republic	**53 904**	**53 301**	**603**	**3 854**	**4 457**	**5 393 637**

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 2006)

Territory	Area (km^2)	Number of inhabitants per km^2	Number of independent municipalities	Average number of inhabitants per municipalities	Urbanization level (%)	
					Urban area	Rural area
Bratislavský region	2 053	296	73	8 311.68	82.91	17.09
Trnavský region	4 147	134	251	2 211.45	49.07	50.93
Trenčiansky region	4 502	133	276	2 173.36	57.12	42.88
Nitriansky region	6 343	112	354	1 998.04	47.19	52.81
Žilinský region	6 808	102	315	2 207.38	50.58	49.42
Banskobystrický region	9 455	69	516	1 270.86	53.72	46.28
Prešovský region	8 974	89	666	1 201.93	49.54	50.46
Košický region	6 752	114	440	1 757.01	56.03	43.97
Slovak Republic	**49 034**	**110**	**2 891**	**1 865.66**	**55.35**	**44.65**

Source: SO SR

Index trend in the SR area structure

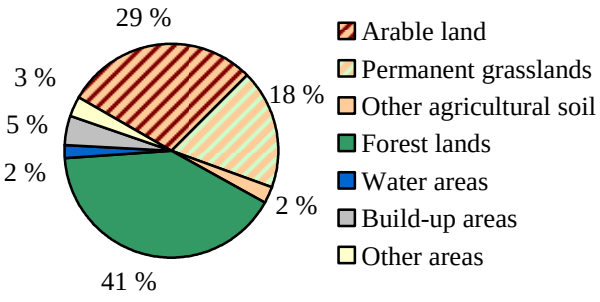
SR is the balanced mosaic composed from the urbanized settlements environment, agricultural and forest countryside, which plays also the production and restoration function for small and larger settlements in Slovakia. Within transformation of the national economy there continually comes to **natural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

Overall land categories to 31st December 2006 (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	75 061	0	4 629	4 528	984	9 841	95 044	75 249	5 567	15 402	13 996	205 259
TT	263 423	129	4 302	8 187	2 469	14 748	293 258	65 315	14 609	27 385	14 146	414 712
TN	98 312	369	68	8 139	2 604	76 768	186 260	220 588	6 311	23 126	13 923	450 207
NR	406 693	35	12 186	14 230	5 090	30 951	469 187	96 136	15 684	37 678	15 657	634 341
ZA	63 207	0	0	6 135	404	176 192	245 939	379 925	12 800	25 047	17 170	680 881
BB	166 682	0	3 304	11 138	1 959	235 465	418 548	462 479	7 905	33 069	23 473	945474
PR	149 693	0	23	10 912	2 139	221 867	384 635	440 629	14 132	31 321	26 625	897 342
KE	204 286	0	2 801	13 543	2 143	115 040	337 813	266 619	16 317	34 064	20 367	675 181
Total	**1 427 357**	**534**	**27 314**	**76 813**	**17 792**	**880 873**	**2 430 683**	**2 006 939**	**93 325**	**227 092**	**145 357**	**4 903 397**

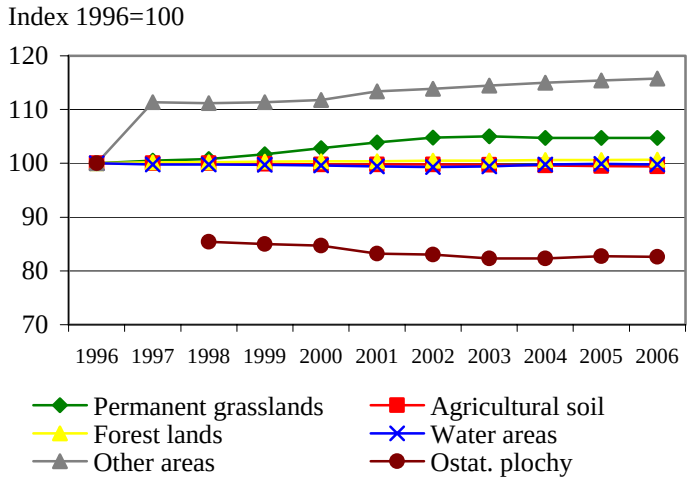
Source: IGCC SR

Areas structure in the SR (2006)



Source: IGCC SR

Index trend in areas structure of SR



Source: IGCC SR

Green in the residential areas

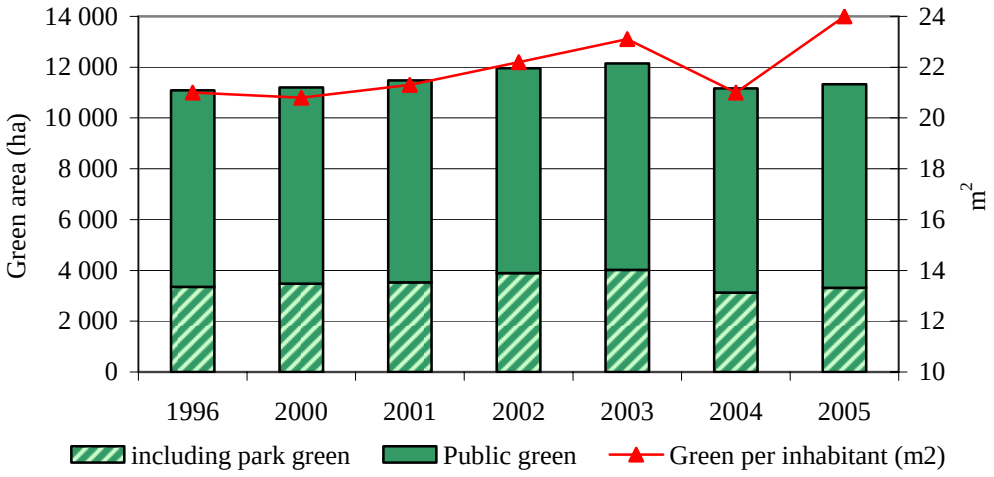
As of **2005,** areas of municipal green in the SR reached **11 334 ha,** including 3 308 ha of park green areas. Its share per one inhabitant was **24 m^2**. Trend in the public greenery size over the last years was positive, notwithstanding its decrease in 2004.

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

Spatial planning

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.

KURS 2001 is a physical planning documentation of the national importance. Objectives of physical planning strategy mentioned in the documentation form the basic framework and give direction for the Slovak spatial development within international and national domains. In their recommendations, the

strategy fully follows the outcomes of the European spatial concepts – building on their objectives and creatively applying them for the Slovak conditions.

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.

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.**

European Landscape Convention

European Landscape Convention (ELC) as the Council of Europe's Convention **focuses on landscape protection, management, landscape planning, and organisation of European cooperation in this area**.

It became effective on March 1, 2004. On December 31, 2006, other 26 Council of Europe member countries acceeded to it or ratified it, and 8 other member countries signed the Convention.

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**.

MoE SR is the competent authority for coordination and management of obligations and cooperation with the affected ministries within the ELC in Slovakia, including the Ministry of Construction and Regional Development SR, Ministry of Culture SR, and Ministry of Agriculture SR. **SEA** (Slovak Environment Agency) is the executive authority for the MoE SR.

In 2006, *Implementation Programme of the European Convention on Landscape in the SR* was developed and approved within the Operation Programme scheme of the MoE SR. The Convention proposes measures to implement its individual parts, as well as to ensure effective cooperation with programmes of implementation of related international treaties and protocols, and other strategic documents. The activies focus on developing a typology of the Slovak landscape, methodology procedures for characteristic landscape identification, assessment of landscape features, typology of urban spaces, identification of historical landscape structures, significant landscape elements, endangered types of landscape, definition of target landscape quality, and ensuring public involvement in its definition.

Assessment of implementation of the European Landscape Convention in 2006:

- **Involvement in the Council's activities** (V. workshop „*Landscape quality objectives: from theory to practise*" in Giron, Spain)
- **Involvement in the EC activities** (participating in the workshop *"Ecological coherence of Natura 2000"* at DG Environment in Brussels with a presentation on methods, state, and Slovak legislation regarding landscape planning)

- **International cooperation** (cooperation with the Czech Republic through organising workshops, exchange of professional experience and specialists; SR initiated a cooperation with the V4 countries and introduced the idea of its implementation in the SR)
- **Active participation in international conferences**

Activities at the national level

- **Organizing a conference -** X. international conference of *Landscape - man - culture* organized as part of the XII. international film festival on environment called ENVIROFILM in Banská Bystrica, addresing the topic of *„Ways to the implemention of the European convention on landscape in the V4 countries."*
- **Active participation at conferences and seminars with international participation**
- **Training of specialists and local governments**
- **Establishing of cooperation** with international institutions and organisations
- **Opening new topics**
  - **characteristic type of landscape**
  - **fragmentation of landscape and habitats** under the Habitats Directive (art.10)
  - **role of greenery** in sustainable development of settlements
- **Publishing activities –** information brochure *"European landscape convention"* for the public, posters, atlas of representative geosystems of Slovakia (REPGES) …

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 local governments and rural micro-regions to support their activities through its counselors and secretariat for VRP, 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.

In 2006, the VRP support reached total volume of **15 mil. SKK**. Subsidy categories were adjusted to take into consideration the preferences of the Ministry of Environment SR.

Total overview of allocating the subsidies to VRP in 2006 (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 and MR	Given amount	Number of villages and MR	Given amount	Number of villages and MR	Given amount
63	6 365 000	104	7 800 000	9	825 000	**176**	**14 990 000**

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

Overview of allocating the subsidies to VRP

	1998	1999	2000	2001	2002	2003	2004	2005	2006	1998 - 2006
Total subsidies (thous. SKK)	8 100	6 500	10 000	19 500	20 000	25 000	4 996	5 230	14 990	**114 316**
Average allocation (SKK)	49 693	46 099	56 497	60 372	67 114	87 108	79 302	76 912	85 170	**67 585**
Number of applications	794	766	718	858	910	1 091	899	699	775	**7 510**
Number of allocations	163	141	177	319	298	278	63	68	176	**1 683**
% of satisfied application	20.5	18.4	24.7	37.2	32.7	25.5	7.0	9.7	22.7	**22.4**

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 and in 2006 it was the village of Vlachovo from the district of Rožňava that had won the competition in 2005.

In 2006, the village of Vlachovo represented Slovakia in the European Village Renewal Award competition. Motto of the competition was: *"Change as a challenge"*, with the village of Koudum winning from among 30 competing municipalities. The village of Vlachovo made a very good impression in the competition and received an award recognising its development that has been built on the connection of construction, cultural, and landscape qualities, as well as acceptable tourism.

*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.*

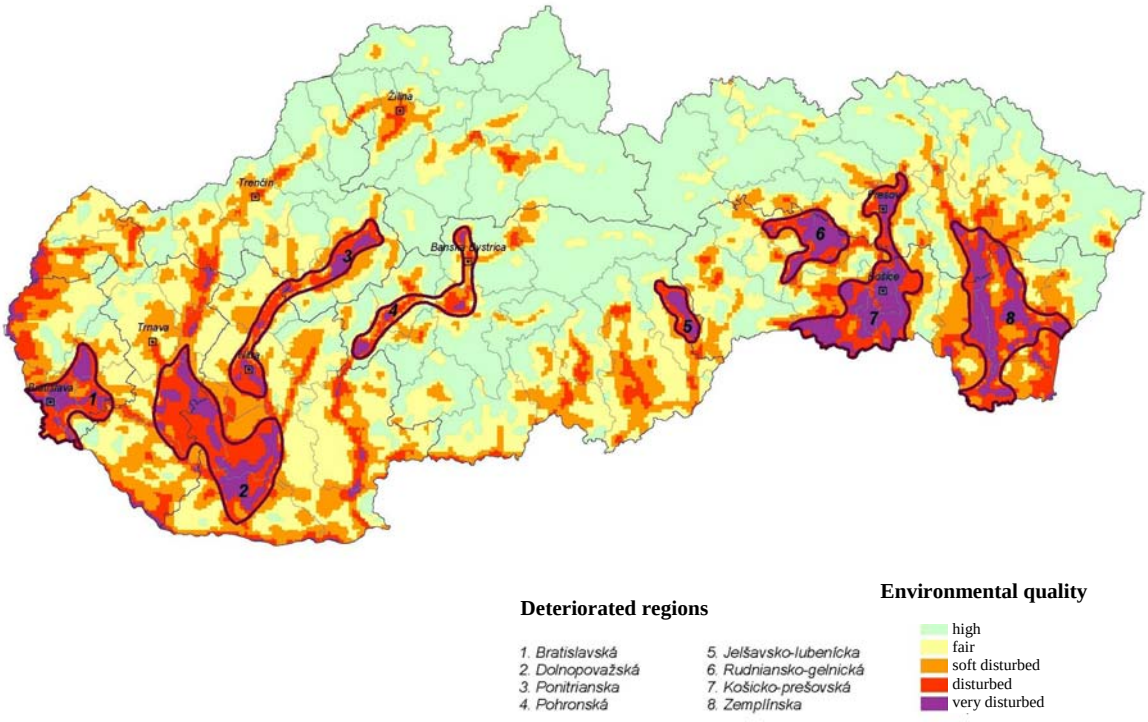
§ 11 of the Act No. 17/1992 Coll. on Environment

ENVIRONMENTAL REGIONALISATION

• ENVIRONMENTAL REGIONALISATION OF SLOVAKIA

State of environment in the Slovak territory is differentiated. Regions show varying degree of individual environmental loads due to anthropogenic activity. Individual components of environment also show different risk factors that in turn limit the quality of life.

Quality of the environment and the loaded areas



Source: SEA

One of the final outputs is a map that evaluates the Slovak territory in 5 degrees of quality of environment, which is the basis for identification of areas with the greatest **environmental load.** The assessment map shows that regions with the greatest environmental load have the tendency to be reduced especially to the areas of the upper Váh region and east Gemer. On the other hand, the loaded area has grwon in size in the lower Zemplín. In other cases, the trend in changes to the size of the loaded territories has not been very significant.

Basic parameters of the loaded areas (LA)

LA	Area* (km^2)	Number of inhabitants
Bratislavská	488	432 000
Dolnopovažská	1 261	247 000
Ponitrianska	450	272 000
Pohronská	203	186 000
Jelšavsko-lubenícka	137	21 000
Rudniansko-gelnická	357	52 000
Košicko-prešovská	1 044	425 000
Zemplínska	1 040	173 000
Total	**4 980**	**1 808 000**

Source: SEA

** The territory includes areas in the 5th and 4th degrees of environmental quality.*

Proportion of loaded areas (LA) on the regions' territories

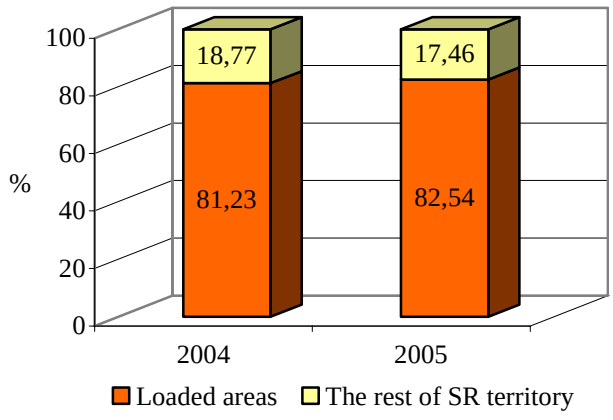
Region	LA of the regions´ territory (km^2)	LA of the regions´ territory – proportion in %
Banskobystrický	599.7	6.3
Bratislavský	515.7	25.1
Košický	2 304.1	34.1
Nitriansky	1 196.4	18.9
Prešovský	416.8	4.6
Trenčiansky	281.9	6.2
Trnavský	499.5	12.0
Žilinský	0.0	0.0

Source: SEA

Loaded areas represent approximately 10 % of the SR territory. The charts show the fact that in the area of air pollution, water contamination, and waste generation that have significantly contributed to the state of environment in the territory; and most indicators show that the loaded areas bear 50 – 90 % of environmental load in Slovakia documented by individual indicators.

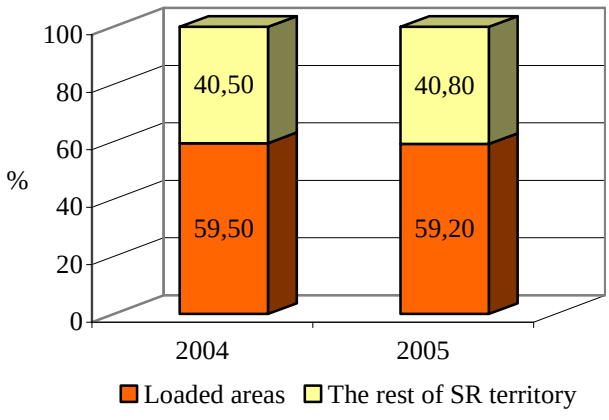
Air

SO_2 emissions from stationary sources in LA



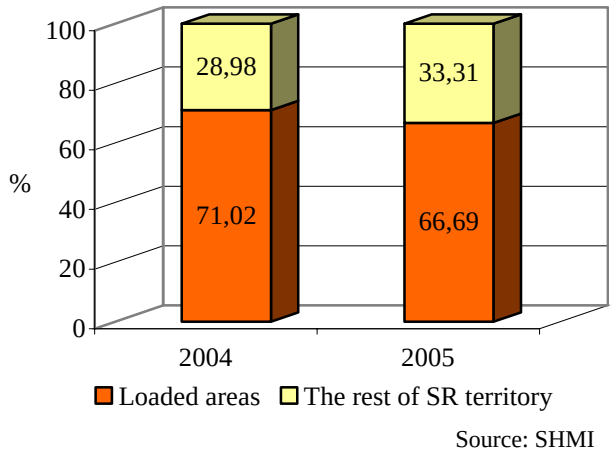
Source: SHMI

Discharged NO_X contamination in LA



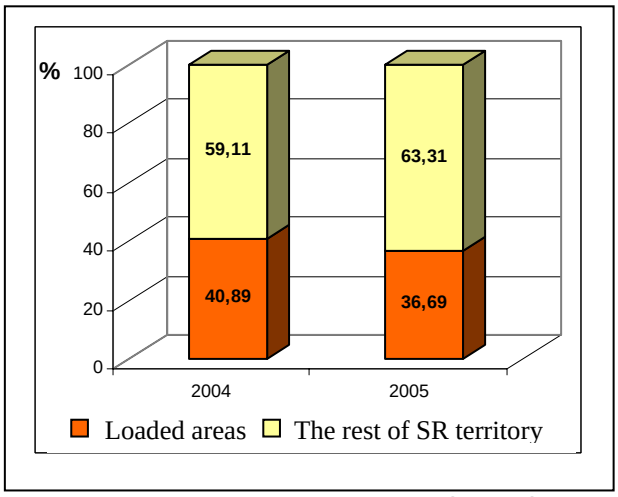
Source: SHMI

CO emissions from stationary sources in LA



Source: SHMI

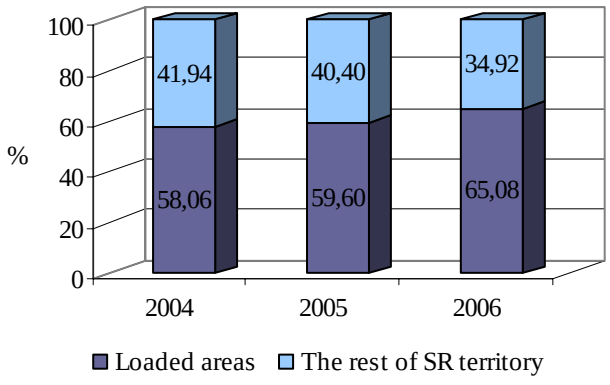
PM emissions from stationary sources in LA



Source: SHMI

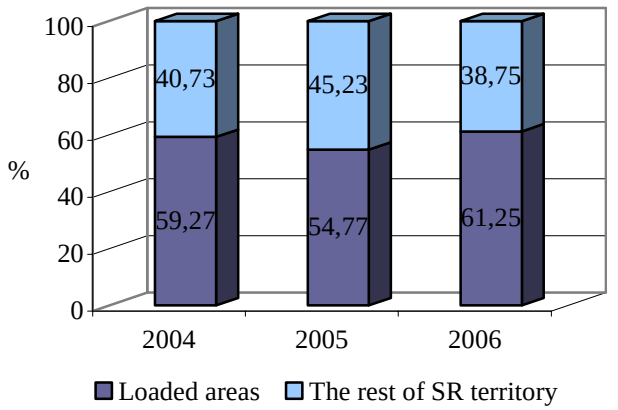
Water

Discharged BOD_5 contamination in LA



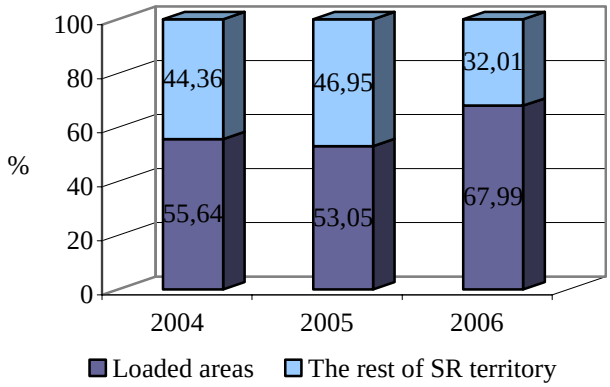
Source: SHMI

Discharged COD_5 contamination in LA



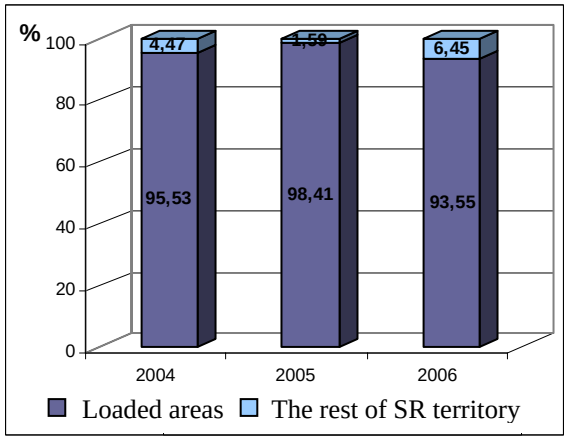
Source: SHMI

Discharged IS contamination in LA



Source: SHMI

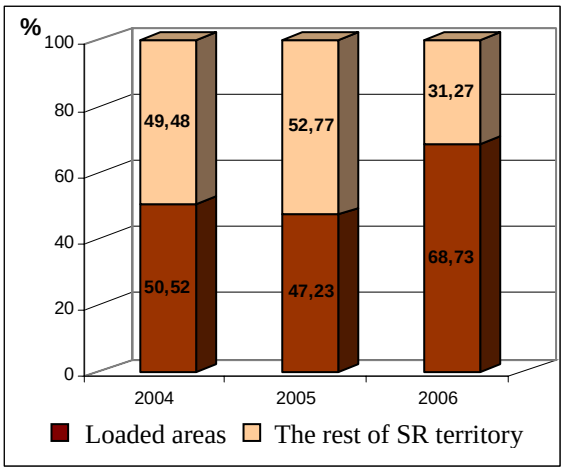
Discharged ENP_{UV} contamination in LA



Source: SHMI

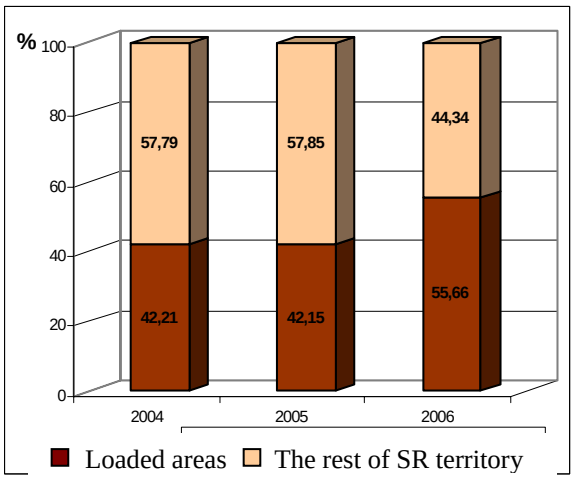
Waste

Other waste generated in LA



Source: SEA

Hazardous waste generated in LA



Source: SEA

*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

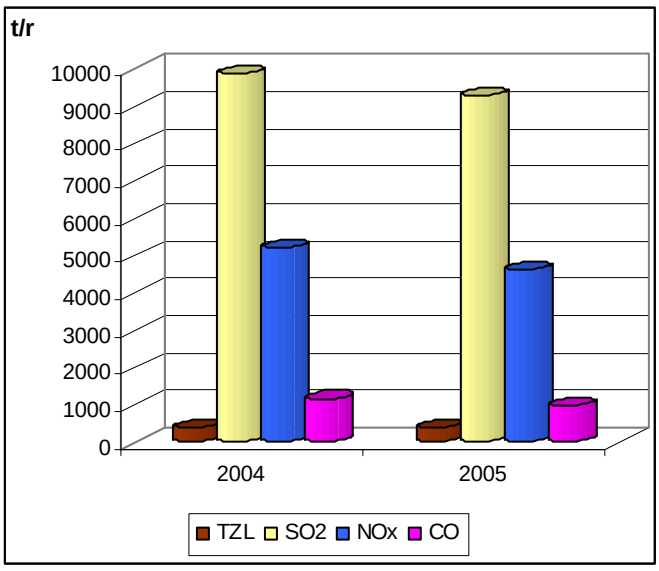
• LOADED AREAS

Bratislava loaded area

♦ Air pollution

Main polluter in the area is the petrochemical industry, power industry, and transportation that increases from year to year. Extensive building activities especially of multi-purpose objects and related demolition, excavation, and contruction works are another significant source of air pollution. Compared to 2004, the volumes of emissions in the area show a decreasing trend.

Emission volumes in Bratislava loaded area in the years 2004, 2005



t/r – tons/year
TZL – PM

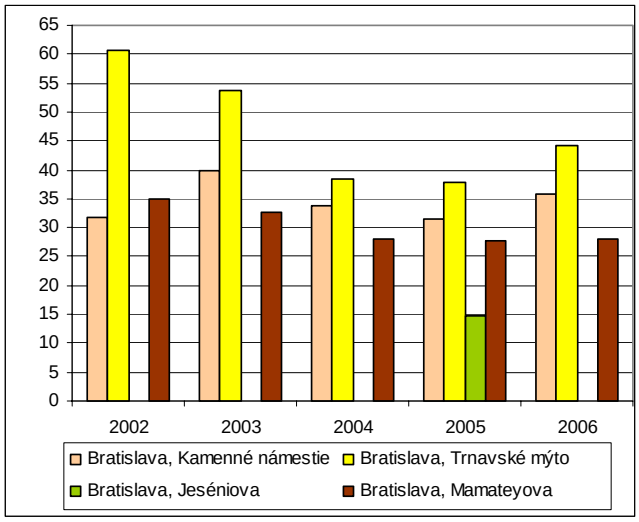
Source: SHMI

Assessement of air pollution by the limit values for human health protection, and limit values increased by the tolerance threshold (TT) for the year 2006 at the monitoring stations in Bratislava loaded area

	Health protection											VHP [2]	
Pollutant	SO_2		NO_2		NO_2+TT		PM_{10}		CO	Benzene	Benzene +TT	SO_2	NO_2
Averaging period	1 hour	24 hour	1 hour	1 year	1 hour	1 year	24 hour	1 year	8 hour [1]	1 year	1 year	3 hour Floating average	3 hour Floating average
Limit value [µg.m^{-3}] *(number of exceeding measurements)*	350 *(24)*	125 *(3)*	200 *(18)*	40	240 *(18)*	48	50 *(35)*	40	10000	5	9	500	400
Bratislava, Kamenné nám.	[b] *0*	[b] *0*	[c] *0*	[c] *32.9*	[c] *0*	[c] *32.9*	*39*	29.1				0	0
Bratislava, Trnavské mýto	*0*	*0*	*0*	**44.1**	*0*	44.1	*100*	**40.7**	3019	2.4	2.4	0	0
Bratislava, Jeséniova *							[a] *10*	[a] *25.2*					
Bratislava, Mamateyova	*6*	*0*	*0*	28.0	*0*	28.0	*48*	30.9				0	0

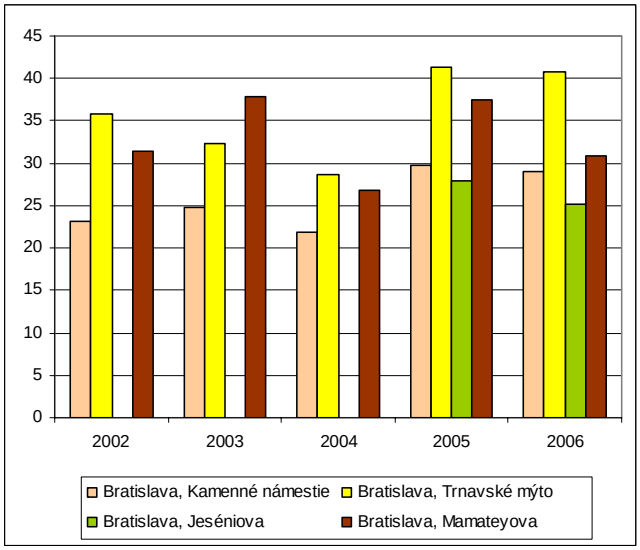
1) maximal eight-hour concentration Source: SHMI
2) limit values for the alarm limit thresholds
Pollutants exceeding the limit values are in bold
Marked yields: > 90%, [a] 75–90 %, [b] 50–75 %, [c] < 50 % of valid measurements

Trend in annual concentration of NO_2 (2002-2006) in Bratislava loaded area (µg.m^{-3})



Source: SHMI

Trend in annual concentration of PM_{10} (2002-2006) in Bratislava loaded area (µg.m^{-3})



Source: SHMI

Number of measured values exceeding the information threshold (IHP) and the alarm threshold (VHP) in ground ozone concentrations to inform or alarm the public in Bratislava loaded area

Station	VHP = 240 µg.m^{-3}					IHP = 180 µg.m^{-3}				
	2002	2003	2004	2005	2006	2002	2003	2004	2005	2006
Bratislava, Jeséniova	0	3	0	0	0	0	42	0	6	11
Bratislava, Mamateyova	0	3	0	0	0	0	32	0	8	19

Source: SHMI

Average eight-hour ground ozone concentration was exceeded at all stations. Permitted limit is 25 days for 3 years in average.

Number of days showing the exceeded average eight-hour O_3 120 µg.m^{-3} ground ozone concentration (target value for protection of human health) at the SHMI monitoring stations in Bratislava loaded area in the years 2004-2006

Station	2004	2005	2006	Average 2004-2006
Bratislava, Jeséniova	28	52	50	43
Bratislava, Mamateyova	15	42	34	30

Source: SHMI

An air-quality management area for the PM_{10} a NO_x pollutants was designated for the Bratislava metropolitan territory within the loaded area.

♦ **Surface water contamination**

Danube is the major water course in the area. Contributors of water contamination include industrial and municipal waste water, agricultural activities, and ship transport. Qjuality of Danube water in the area has been adversely affected by contamination flowing from its upper feeding stream, Morava (III.-IV. categories) Surface water in the Morava watershed belongs to heavily polluted waters. It is mainly the discharged cooling waste water from Slovnaft and the run-off water from towns, that influence the quality of the Malý Danube water. Classification of the Danube water flow into the V. quality category in 2006 was the consequence of recorded great Al volumes in the category of micro-pollutants (F).

Quality of water in the water courses within the loaded area has not changed significantly over the monitored years. The poorest water quality (IV.-V. category) has long been shown for the groups of microbiological indicators (E) and micropollutants, notwithstanding a recent improvement in the Malý Danube water course by one quality category.

Surface water quality in Bratislava loaded area

Watercourse	Sampling site	Indicator groups and quality categories																	
		A			B			C			D			E			F		
		2004	2005	2006	2004	2005	2006	2004	2005	2006	2004	2005	2006	2004	2005	2006	2004	2005	2006
Danube	Karlova Ves	II	II	II	II	III.	III.	II	III.	III.	III	III	III	IV	IV	IV	V	V	V
	Bratislava left bank	II	II	II	II	III	III	III	III	III	III	III	III	IV	IV	IV	V	V	V
	Bratislava centre	II	II	II	III	III	IV	II	II	II	III	III	II	IV	IV	IV	V	V	V
	Bratislava right bank	II	II	II	II	II	III	II	II	II	III	III	II	V	IV	IV	V	V	V
	Rajka	II	I	II	II	II	III	II	II	II	III	III	II	IV	IV	IV	V	I	I
Malý Danube	Bratislava	II	I	I	II	II	II	III	II	II	IV	III	III	IV	III	III	III	IV	IV
	Malinovo	II	I	I	II	II	II	IV	IV	IV	IV	III	III	IV	III	III	IV	IV	IV

Source: SHMI

♦ **Ground water contamination**

Ground water quality within the loaded area has been monitored for the important water management regions of Bratislava and Small Carpathians. Monitoring was implemented at 18 facilities of the monitoring network (16 wells within the basic SHMI network, 1 actively used well, and 1 unused well). Ground water has been significantly influenced by anthropogenic contamination. The most frequently exceeded indicators include total Fe and Mn. Sulphates also belong among the frequently exceeded indicators. Limit values for heavy metals were exceeded for the categories of Al and Hg.

The area still shows an adverse situation in ground water contamination by sulphates, nitrates, chlorides, heavy metals, and specific organic compounds. This has been been caused mainly by a heavy concentration of chemical and petrochemical industries, and a dense population.

♦ **Sources of water contamination**

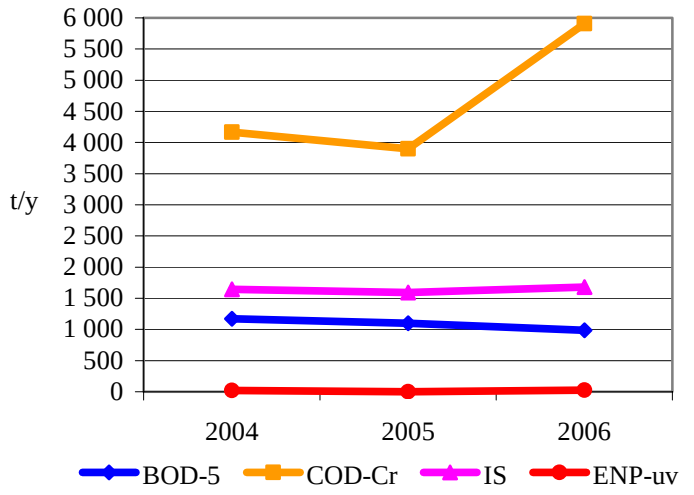
Major sources of water contamination and contamination discharged to surface water within Bratislava loaded area

Source of contamination	BOD_5 ($t.r^{-1}$)			COD_{Cr} ($t.r^{-1}$)			IS ($t.r^{-1}$)			$ENP_{UV,}$ ($t.y^{-1}$)		
	2004	2005	2006	2004	2005	2006	2004	2005	2006	2004	2005	2006
Slovnaft,Inc.,-WWTP	77.34	70.34	77.15	395.04	484.80	522.63	113.94	113.4	142.54	3.14	0	5.08
Istrochem,Inc.,-WWTP	729.29	696.5	532.51	1 905.23	1 594.24	1 404.52	57.71	47.89	59.25	1.29	0.66	0.75
Slovnaft bl. 17-18-WWTP	125.79	123.8	133.23	516.58	573.82	597.73	535.24	573.9	502.98	16.6	0	18.53
BVS,Inc.,-WWTP Vrakuňa	176.04	149.7	171.65	1 010.29	893.21	1 005.07	728.95	641	715.35	0	0	0
BVS,Inc.,-WWTP Petržalka	60.71	58.16	72.27	337.86	353.39	373.92	209.83	217.6	257.63	0	0	0

Source: SHMI

The year 2006 shows a slight increase in the volumes of discharged contamination at these sources for the majority of the indicators.

Trend in discharging of the polution from significant resource into watercourses in Bratislava loaded area



Source: SHMI

- **Waste management**

Balance of waste generation

Waste production in Bratislava loaded area

Sort of waste	Waste production (t)		
	2004	2005	2006
Hazardous waste	74 195.38	51 555.00	80 223.48
Other waste	1 524 273.38	866 951.67	3 208 571.95
Municipal waste	184 937.70	200 998.52	194 973.39
Waste production in total	**1 783 406.46**	**1 119 505.19**	**3 483 769.82**

Source: SEA, SO SR

Waste handling

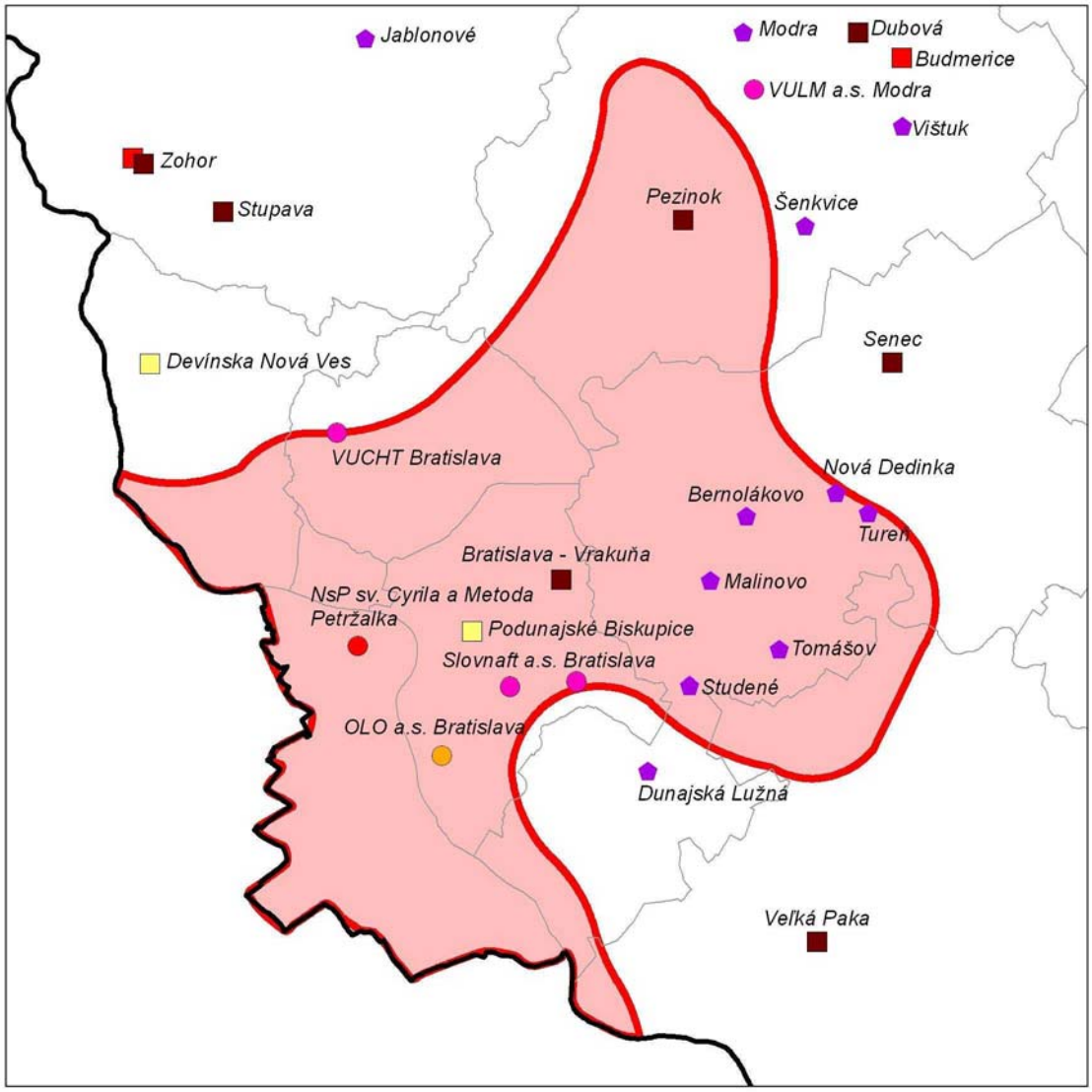
The most frequent waste handling activities within the monitored area include landfills and incineration. 44 – 84% of annual production of the other waste and approximately 20 % of annual production of hazardous waste was disposed of at landfills, while 21 % of annual production of hazardous waste was disposed of through incineration. Annual production of hazardous waste reclamation rate was approximately 35 %, for other waste it was within the interval of 12 – 29 %.

Waste handling activities in the Ponitrie loaded area

Waste handling	2004		2005		2006	
	Waste amount (t)					
	Hazardous waste	Other waste	Hazardous waste	Other waste	Hazardous waste	Other waste
Reclamation	27 923.00	240 324.00	18 740.33	250 572.75	25 062.52	378 739.26
Disposal through landfills	17 766.00	1 241 388.00	9 603.99	383 985.22	11 982.73	2 686 387.65
Disposal through incineration	18 089.00	1 702.00	11 566.88	3 048.05	13 958.96	19 338.64
Biological disposal	5 222.00	8 024.00	5 311.24	4 409.61	5 476.08	2 186.18
Other disposal	5 195.00	32 835.00	6 329.87	224 934.06	23 743.26	121 920.33

Source: SEA

Waste disposal facilities in Bratislava loaded area in 2006



Waste disposal facilities

- Municipal waste incinerator
- Medical waste incinerator
- Industrial waste incinerator
- Hazardous waste landfill
- Non-hazardous waste landfill
- Inert waste landfill
- Landfill operated under special conditions

Source: SEA

Lower Váh loaded area

- **Air pollution**

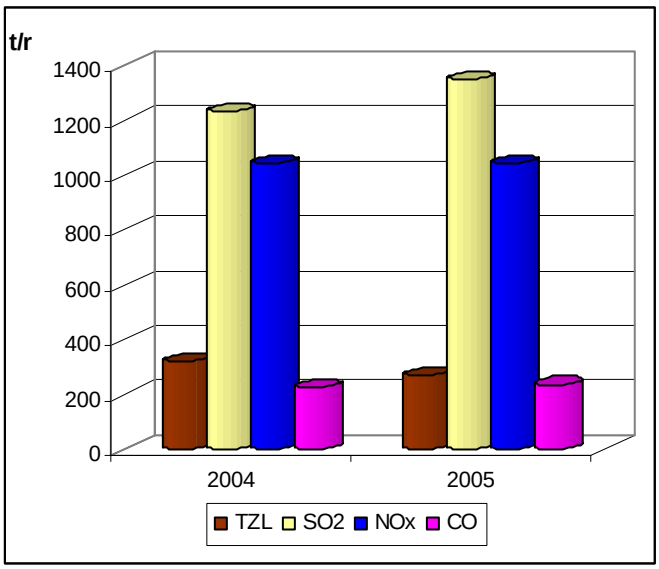
Air quality within the area has been affected especiallz by the operation of large industrial soures that belong to the major chemical industrial agents. Significant contributors to total pollution include transportation, especially within the main transportation corridors.

Five major operators of air pollution sources in the Lower Váh loaded area

No.	Operator
1.	Duslo, Inc., Šaľa
2.	Slovenské cukrovary, Inc., prevádzkareň Sereď
3.	Mach-Trade, Ltd., Sereď
4.	Zelex Slovakia, Ltd., Komárno
5.	QUEEN, Ltd., Neded

Emission volumes within the area in 2005 increased for all pollutants, with the exception of PM, which showed a falling trend.

Emission volumes in the Lower Váh loaded area in the years 2004, 2005



t/r – tons/year Source: SHMI
TZL – PM

There is no air pollution monitoring station within the area. Therefore, air quality of this loaded area cannot be assessed.

- **Surface water contamination**

The area includes the lower portion of the Váh River that receives run-off and industrial waste water. In this region, the Váh River has been regularly contaminated from the streams of Trnávka and the Lower Dudváh that show the persisting water quality of the IV. category. Classification of the Váh water course into the V. quality category in 2006 was the consequence of recorded big Hg volumes in the category of micro-pollutants (F).

The area also includes the lower Nitra River region with the water quality within the IV.-V. categories. This part of the river together with its feeding streams has been impacted by the food industry and discharged run-off waste water from residential zones. The water course is heavily contaminated.

Quality of water in the water courses within the area has not changed significantly over the monitored years. The poorest water quality (IV.-V. category) for most indicator groups has long been shown at Nitra and Malá Nitra water courses.

Surface water quality in the Lower Váh loaded area

Watercourse	Sampling site	Indicator groups and quality categories																	
		A			B			C			D			E			F		
		2004	2005	2006	2004	2005	2006	2004	2005	2006	2004	2005	2006	2004	2005	2006	2004	2005	2006
Váh	Nad Sereďou	III	II	II	IV	II	II	II	V	II	III	II	III	IV	III	III		I	III
	Selice	III	II	II	IV	III	II	III	III	II	V	III	III	IV	III	III	III	V	V
	Kolárovo	II	I	I	III	II	III	III	III	III	IV	II	II	IV	III	III		III	
Trnávka	Modranka	V	V	IV	IV	III	III	V	V	IV	V	III	IV	V	IV	V	V	V	IV
D. Dudváh	Sládkovičovo	IV	III	IV	V	IV	IV	V	V	V	IV	IV	IV	IV	V	V	IV	V	V
Malá Nitra	Pod Šuranmi	III	III	IV	IV	IV	IV	V	V	V	III	IV	IV	IV	IV	V	IV	V	IV
Nitra	Komoča	III	IV	IV	IV	IV	IV	V	V	V	IV	IV	IV	V	V	V	IV	IV	IV

Source: SHMI

- **Ground water contamination**

Ground water quality within the loaded area has been monitored for the major water management areas at 16 facilities of the monitoring network (16 wells of the basic SHMI network). The most frequently exceeded indicators include total Fe, Mn, and the ammonium ions. The exceeded anions included chlorides and sulphates.

Compared to the previous years, ground water quality in the area of the Lower Váh has not changed significantly. The area of alluvial sediments of the Nitra River is heavily attacked by agricultural and industrial activities.

- **Sources of water contamination**

Major water contamination sources for both the loaded area, as well as the whole SR territory, include WWTP Duslo, Inc. Šaľa, WWTP Trnava, WWTP Nové Zámky, and WWTP Galanta. Other than the mentioned soruces, sewerages of the cities of Sereď, Šaľa, Sládkovičovo, and the sugar refinery in Sereď, significantly impact water contamination.

Major sources of water contamination and contamination discharged to surface water within the Lower Váh loaded area

Source of contamination	BOD_5 ($t.y^{-1}$)			COD_{Cr} ($t.y^{-1}$)			IS ($t.y^{-1}$)			$ENP_{UV,IČ}$ ($t.y^{-1}$)		
	2004	2005	2006	2004	2005	2006	2004	2005	2006	2004	2005	2006
Duslo,Inc.,Šaľa - WWTP	181.90	118.30	241.16	592.48	497.87	686.92	157.49	121.04	114.76	2.68	1.44	1.96
TAVOS,Inc., - WWTP Trnava-Zeleneč	111.63	139.20	173.52	343.19	456.15	542.98	108.62	144.31	160.65	0	0	0
ZVS, Inc., OZ Nové Zámky WWTP	x	x	332.54	x	x	689.42	x	x	380.42	x	x	0
ZVS, Inc., OZ Galanta WWTP	x	x	124.84	x	x	301.53	x	x	60.65	x	x	0

x – source was not listed among the major sources within the SR, and was not considered for the assessment of the loaded area

Source: SHMI

- **Waste management**

Balance of waste generation

Total waste generation in the area, by the RISO data, was on the rise in 2004-2006. This was caused by an increased generation of hazardous waste, as well as a significant growth in the production of other waste types. Trend in the generation of municipal waste shows a slight reduction.

Waste production in the Lower Váh loaded area

Sort of waste	Waste production (t)		
	2004	2005	2006
Hazardous waste	15 543.23	14 844.98	43 791.96
Other waste	79 003.43	202 317.31	237 375.97
Municipal waste	84 220.70	75 462.03	80 448.77
Waste production in total	**178 767.36**	**292 624.32**	**361 616.70**

Source: SEA, SO SR

Waste handling

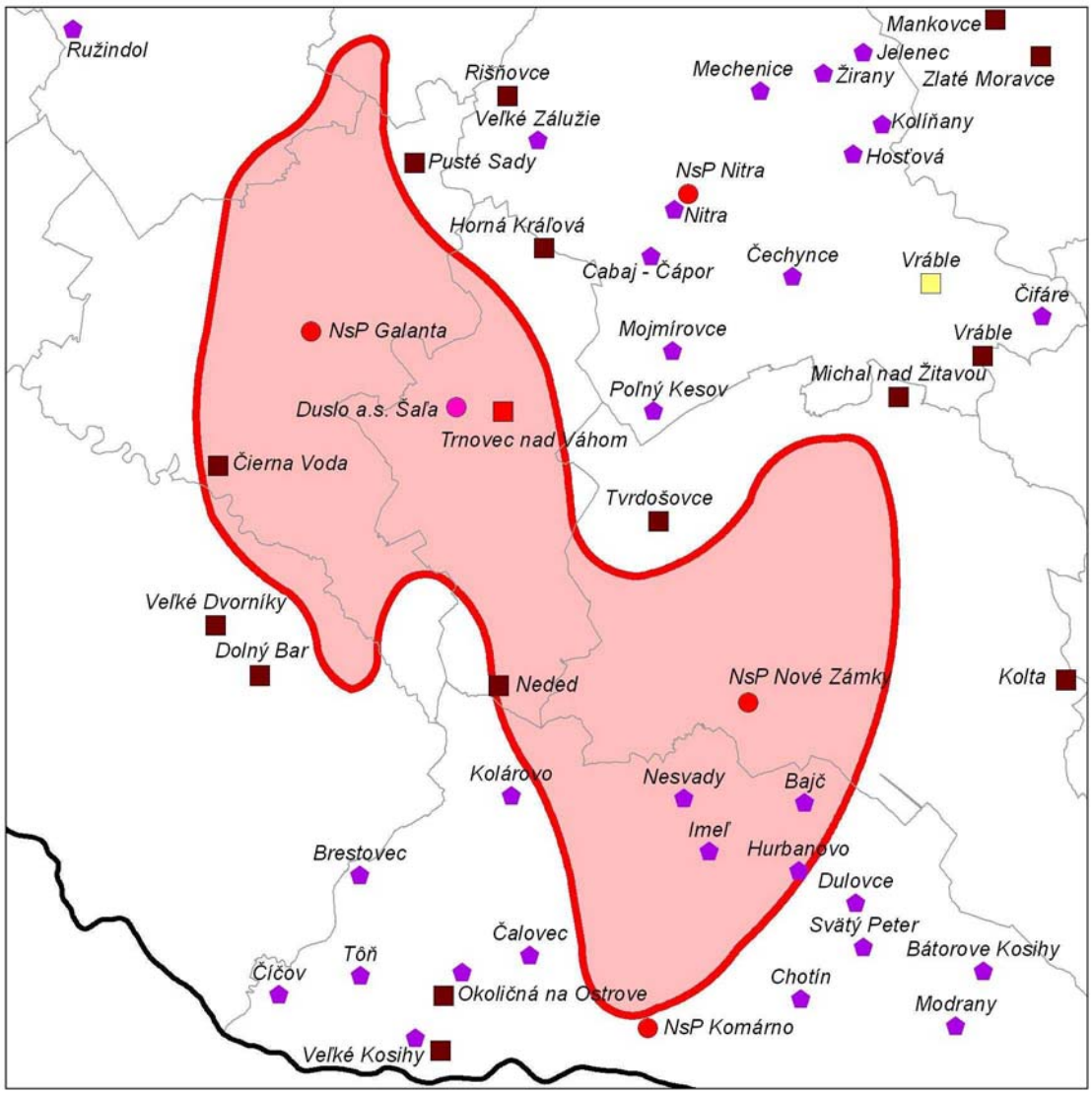
The most frequent handling types of hazardous waste within the area were incineration, approximately 47 %, and landfills, approximately 30 % of the annual waste production. Increase in hazardous waste reclamation rate was from 5-6 % to 31 % in 2006. Total assessment of other waste handling activities shows the dominance of other waste handling activities within the interval of 56-73 %, while 18 % of the annual production was disposed of through landfills. The area shows an increase in other waste reclamatiom activities to 29 % in 2006.

Waste handling activities in the Lower Váh loaded area

Waste handling	2004		2005		2006	
	Waste amount (t)					
	Hazardous waste	Other waste	Hazardous waste	Other waste	Hazardous waste	Other waste
Reclamation	900.00	16 472.00	812.96	15 472.91	13 499.59	69 296.53
Disposal through landfills	5 853.00	15 575.00	3 881.08	38 554.12	11 748.50	33 587.25
Disposal through incineration	7 440.00	307.00	7 465.93	808.82	17 033.38	263.72
Biological disposal	223.00	23.00	45.89	173.35	275.45	384.68
Other disposal	1 127.00	46 626.00	2 638.46	147 307.75	1 235.14	133 843.79

Source: SEA

Waste disposal facilities in the Lower Váh loaded area 2006



Waste disposal facilities

- Municipal waste incinerator
- Medical waste incinerator
- Industrial waste incinerator
- Hazardous waste landfill
- Non-hazardous waste landfill
- Inert waste landfill
- Landfill operated under special conditions

Source: SEA

Ponitrie loaded area

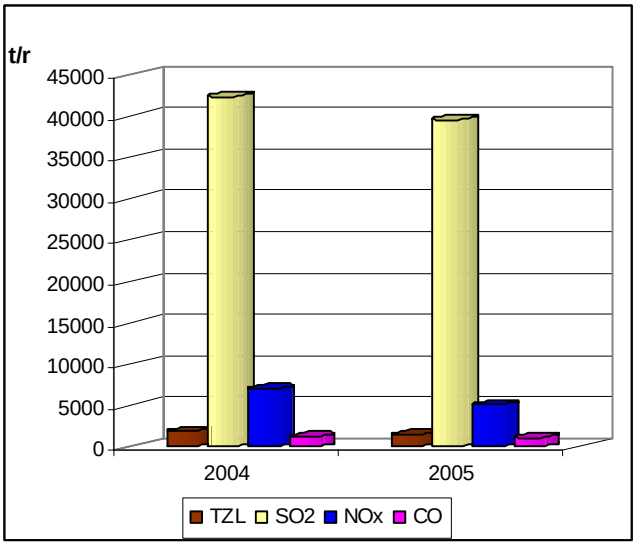
- **Air pollution**

Structure of industry that includes power, chemical, and mining industries is typical for its used high energy demand technologies with a significant escape of emissions, which significantly impacts the quality of air in the area. Significant contributors to total pollution include also transportation, especially within the main transportation corridors.

Five major operators of air pollution sources in Ponitrie loaded area

No.	Operator
1.	Novácke chemické závody, Inc. , Nováky
2.	SE, Inc., Bratislava, - ENO Zemianske Kostoľany
3.	KVARTET, Inc., Partizánske
4.	TSM, Ltd., Partizánske
5.	IDEA NOVA, Ltd., Nitra

Emission volumes in the Ponitrie loaded area in the years 2004, 2005



t/r – tons/year Source: SHMI
TZL – PM

In terms of local air pollution in 2006, the pollution limit for sulphur dioxide was not exceeded for hour, nor for daily values with greater number than the limit value for protection of human health. PM_{10} particles exceeded the permitted number of exceeding times at all monitoring stations in the area. Air pollution by lead in 2006 showed a decreasing trend and does not exceed the limit value. Limit value in case of benzene was not exceeded either. Exceeding of the information threshold for ground ozone was not recorded. Alarm threshold was not exceeded in the area.

There was defined an air quality management zone in the area for the territories of Nitra and the district of Prievidza, to monitor the PM_{10}, and SO_2 pollutants.

- **Surface water contamination**

The area includes the upper and central regions of the Nitra River. Surface water shows heavy to extremely heavy contamination, due to anthropogenic activities. The upper region of the river shows water quality that has for a long time been impacted by water from the mining industry. Also, industrial activities negatively impact water quality – production of plastic and heavy chemistry, electric power plants, heating stations, leather-processing industry, and food-processing industry in the river's central region. Classification of water courses into the V. quality category in 2006 was the consequence of different P and N forms in the nutrient group (C), saprobic biosestone index in the biological indicators group (D), volumes of the coliform and thermo-tolerant coliform bacteria, fecal streptococci in the microbiological indicators group (E), and the content of ENP_{UV} and Hg in the micropollutants group (F).

There has been a persisting adverse condition in surface water quality.

Surface water quality in the Ponitrie loaded area

Water-course	Sampling site	Indicator groups and quality categories																	
		A			B			C			D			E			F		
		2004	2005	2006	2004	2005	2006	2004	2005	2006	2004	2005	2006	2004	2005	2006	2004	2005	2006
Nitra	Opatovce n/N.	III	III	III	II	II	II	III	IV	IV	III	III	III	V	V	V			
	Chalmová	III	IV	V	V	V	V	IV	V	IV	V	IV	V	V	V	V	V	V	V
	Nitrianska Streda	III	V	III	IV	IV	IV	IV	V	IV	IV	IV	IV	V	V	V	V	V	V
	Lužianky	III	III	III	IV	IV	IV	IV	IV	IV	IV	IV	IV	V	V	V	IV	V	V
	Čechynce	V	IV	IV	IV	IV	IV	V	V	IV	IV	IV	V	V	V	V	IV	V	IV
Handlovka	Koš	IV	V	IV	III	III	III	V	V	V	IV	IV	V	V	V	V	IV	V	V
Nitrica	Partizánske	II	II	II	II	II	II	III	IV	III	III	III	III	IV	III	IV	III	IV	V
Bebrava	Krušovce	III	III	III	III	III	III	IV	V	IV	IV	IV	IV	V	V	V	IV	IV	IV

Source: SHMI

- **Ground water contamination**

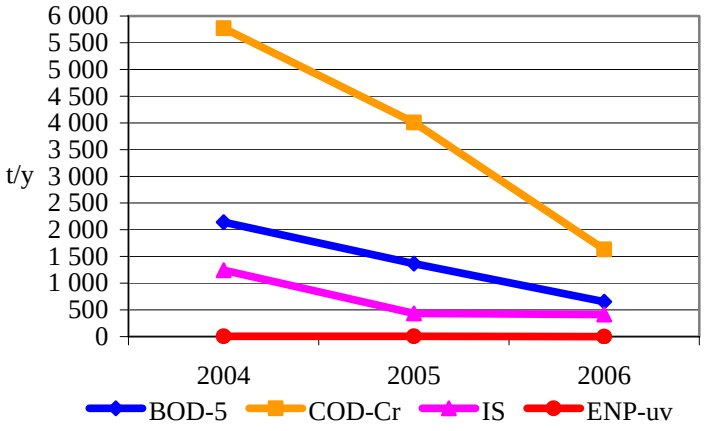
Ground water quality within the loaded area has been monitored for significant water management areas of the Mesozoic formation of Strážovské hills, and alluvial sediments of the Nitra river from Prievidza to Hurbanovo at 17 facilities of the monitoring network (16 wells of the basic SHMI network, 1 actively used well). The most frequently exceeded indicators include total Fe, Mn, and the ammonium ions. Exceeded are also values for chlorides, sulphates, and nitrates.

There has been a continuing deterioration in the ground water situation in the area of alluvial sediments of Nitra. The area shows a high rate of industrial and agricultural activities, which negatively impacts the ground water chemistry.

- **Sources of water contamination**

Major water contamination sources for both the loaded area, as well as the whole SR territory, include WWTP NCHZ Nováky, WWTP Topoľčany, and WWTP Nitra. Besides these sources, public sewerage of the cities of Prievidza and Partizánske, as well as other sources above the loaded area, contribute to water contamination. In 2006, there was a significant reduction in discharged contamination from the production plant of NCHZ, Inc. Nováky.

Trend in discharging of the polution from significant resource into watercourses in Ponitrie loaded area



Source: SHMI

♦ **Waste management**

Balance of waste generation

Total production of waste within the area during the years 2004-2006 showed relatively balanced characteristics. There was a gradual increase in the production of municipal waste and other waste, having a major impact on total waste production within the area. Trend in the production of hazardous waste showed fluctuating characteristics.

Waste production in the Ponitrie loaded area

Sort of waste	Waste production (t)		
	2004	2005	2006
Hazardous waste	22 776.19	35 124.34	11 005.85
Other waste	1 041 523.87	1 064 061.20	1 160 447.21
Municipal waste	82 889.60	88 731.29	100 132.53
Waste production in total	**1 147 189.66**	**1 187 916.83**	**1 271 585.59**

Source: SEA, SO SR

Waste handling

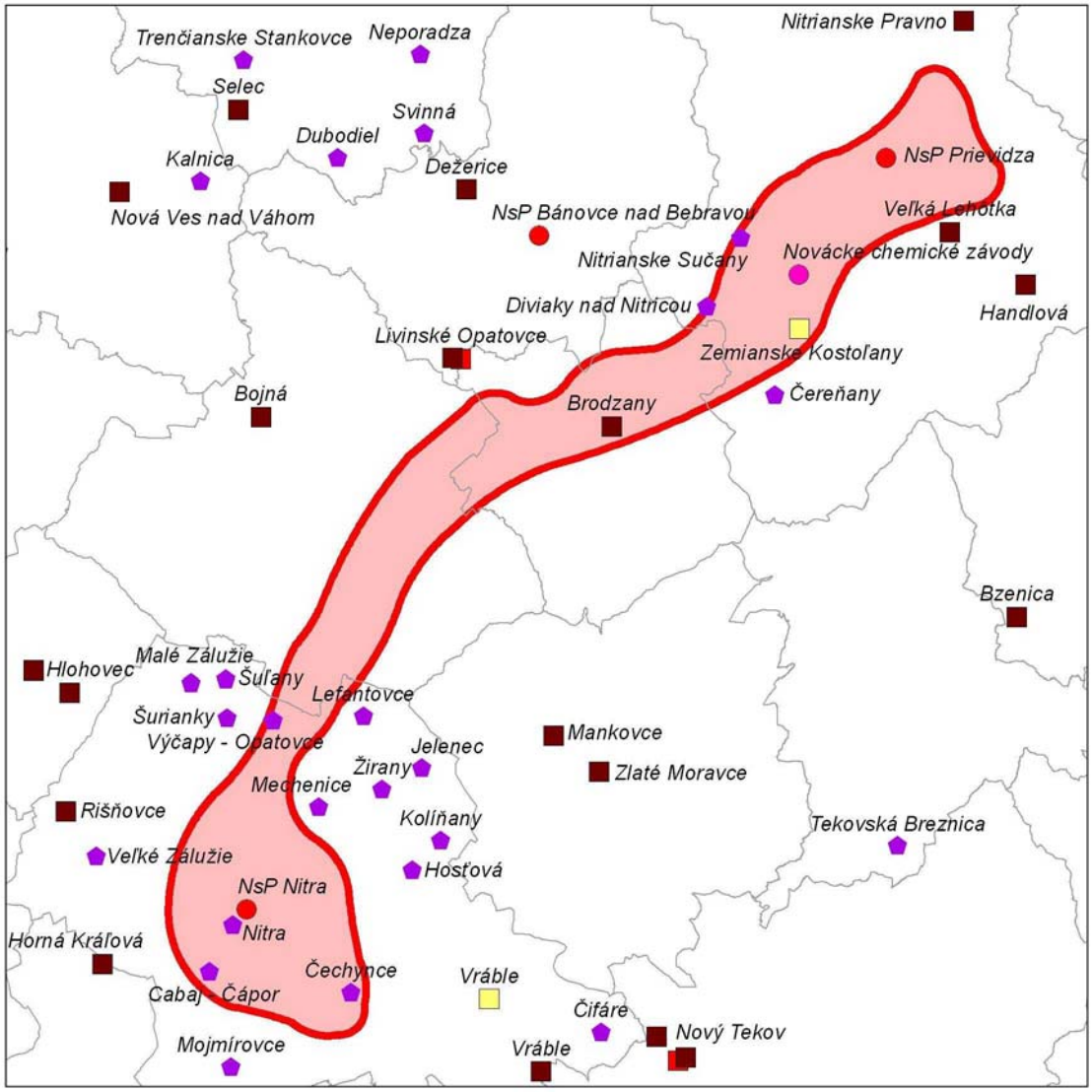
Landfills represent the most frequent way of waste disposal with approximately 68 %, while 28 % is disposed of through reclamation. Hazardous waste handling for the monitored period varied. While in 2004 hazardous waste was disposed of through waste reclamation in 59 %, in 2005, 49 % of waste was incinerated, and in 2006, 51 % of waste was disposed of through other approaches. About 8 % of annual hazardous waste production was disposed of through landfills.

Waste handling activities in the Ponitrie loaded area

Waste handling	2004		2005		2006	
	Waste amount (t)					
	Hazardous waste	Other waste	Hazardous waste	Other waste	Hazardous waste	Other waste
Reclamation	13 372.00	291 586.00	6 168.83	276 965.53	2 095.41	351 236.05
Disposal through landfills	1 178.00	707 923.00	2 994.53	742 516.80	1 083.81	777 287.54
Disposal through incineration	2 295.00	39.00	17 575.94	77.87	1 374.99	9 857.72
Biological disposal	2 509.00	1 998.00	642.37	2 987.03	784.02	8 319.36
Other disposal	3 422.00	39 978.00	7 741.40	41 513.27	5 667.74	13 746.68

Source: SEA

Waste disposal facilities in the Ponitrie loaded area in 2006



Waste disposal facilities

- Municipal waste incinerator
- Medical waste incinerator
- Industrial waste incinerator
- Hazardous waste landfill
- Non-hazardous waste landfill
- Inert waste landfill
- Landfill operated under special conditions

Source: SHMI

Pohronie loaded area

- **Air pollution**

Wood-processing industry, aluminium production, as well as a great number of local heat sources, all contributes to air contamination in the area.

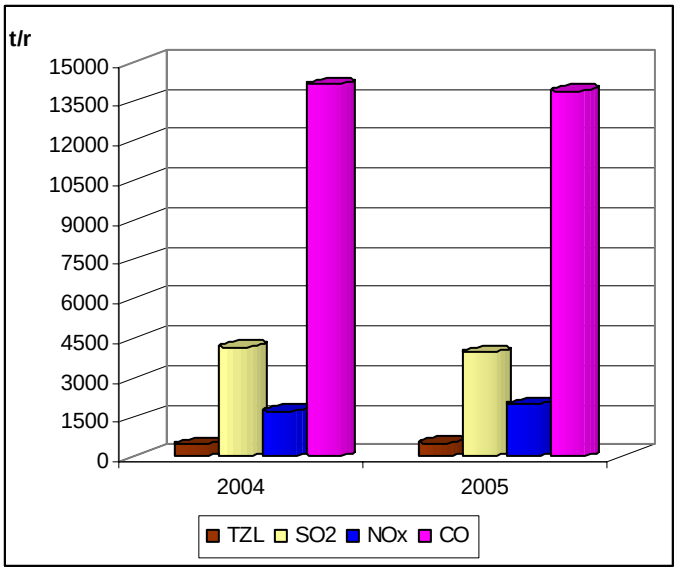
Major local pollution sources include mainly transportation, suspension and re-suspension of particles from insufficiently clean roads, construction sites, landfills of powder material, heating of houses with solid fuels, and agriculture.

Five major operators of air pollution sources in Pohronie loaded area

No.	Operator
1.	SLOVALCO, Inc., Žiar nad Hronom
2.	Zvolenská teplárenská, Inc., Zvolen
3.	ZSNP, Inc., Žiar nad Hronom
4.	Bučina, Inc., Zvolen
5.	BUČINA DDD, Ltd., Zvolen

Volumes of emissions in 2005 show a slightly decreasing trend.

Emission volumes in Pohronie loaded area in the years 2004, 2005



t/r – tons/year
TZL – PM

Source: SHMI

In terms of local air pollution in 2006, the pollution limit for sulphur dioxide was not exceeded for hour, nor for daily values with greater number than the limit value for protection of human health. The annual limit value for protection of human health for nitrogen dioxide was not exceeded either. PM_{10} particles exceeded the permitted number of exceeding times at both monitoring stations in the area. Air pollution by lead in the area showed a slightly decreasing trend and did not exceed the limit values. Exceeding of the information threshold for ground ozone was not recorded. Alarm threshold was not exceeded in the Hron loaded area.

There was defined an air quality management zone for the territory of Banská Bystrica to monitor the PM_{10} pollutant. Similar zone was proposed on the basis of air quality assessment for the PM_{10} pollutant in Žiar nad Hronom, and Ladomerská Vieska.

- **Surface water contamination**

Hron is the major water course in the area. Water quality within the area is also influenced by received contamination from the upper region of th Hron river, which is the recipient of waste water from machinery, wood-processing, and food-processing plants, as well as from oil refineries and the

production of heating oils. Contamination by waste water from wood-processing and metal –processing industries is present in the surroundings of Žiar nad Hronom and Žarnovica.

Classification of water courses into the V. quality category in 2006 was the consequence of volumes of the coliform and thermo-tolerant coliform bacteria in the microbiological indicators group (E), and the content of ENP_{UV} and Al in the micropollutants group (F).

Water quality in the loaded area over the recent years has not changed significantly. Water quality has been adversely affected also by discharged municipal waste water within and outside municipal zones.

Surface water quality in the Pohronie loaded area

Water-course	Sampling site	Indicator groups and quality categories																	
		A			B			C			D			E			F		
		2004	2005	2006	2004	2005	2006	2004	2005	2006	2004	2005	2006	2004	2005	2006	2004	2005	2006
Hron	B. Bystrica	III	II	II	III	II	III	III	II	III	III	III	III	IV	V	V	IV	III	II
	Sliač	III	IV	IV	II	II	II	III	III	III	IV	III	III	V	V	V	IV	III	III
	Budča	III	III	III	II	I	I	III	III	III	IV	III	III	V	V	V	IV	IV	V
	Žiar n/Hron.	III	II	II	II	II	III	III	III	III	IV	III	III	V	V	V	IV	IV	V
	Žarnovica	III	II	II	II	II	II	III	III	III	IV	III	III	IV	V	V	II	IV	IV
Bystrica	B. Bystrica	III	IV	IV	II	II	II	II	III	III	III	IV	IV	IV	IV	IV	III	IV	III
Zolná	mouth	IV	III	IV	II	II	II	IV	III	III	V	IV	IV	V	V	V	V	V	V
Neresnica	mouth	II	II	II	III	II	II	III	IV	III	III	II	II	IV	IV	IV	III	III	I
Slatina	mouth	III	III	III	V	II	II	IV	IV	IV	III	III	III	IV	IV	IV	IV	V	V

Source: SHMI

- **Ground water contamination**

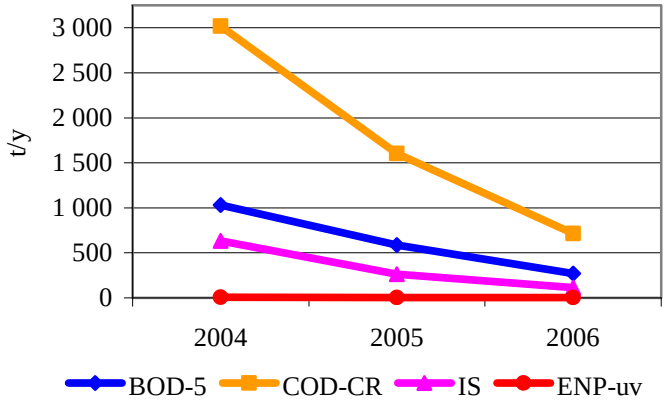
Ground water quality within the loaded area has been monitored for the major water management zones of alluvial sediments of the Hron river, Mesozoic of the Low Tatras and Veľká Fatra, and int the zone of alluvial sediments of the Hron river from Žiar nad Hronom to Želiezovce, at 6 facilities of the monitoring network (6 wells of the basic SHMI network). The most frequently exceeded indicators include total Fe, Mn, and the ammonium ions. Most heavily contaminated zone of alluvial sediments of the Hron river is Lehôtka pod Brehmi, with total exceeded limit values for 13 indicators.

Compared to the previous period, ground water quality has not changed significantly, especially in terms of trace elements. Contamination in the category of specific organic compounds increased.

- **Sources of water contamination**

Major sources of pollution for the local as well as the whole Slovak territory include WWTP SHP Harmanec, and WWTP Banská Bystrica. Other sources of water contamination include public sewerages and industrial facilities in Zvolen, Slovenská Ľupča, Žiar nad Hronom, and Žarnovica. Over the recent years, discharged contamination in the area was reduced, due to reduced discharged contamination from the company Biotika Inc., Slovenská Ľupča. In 2006, a reconstruction and expansion of the WWTP Zvolen and WWTP of Banská Bystrica was completed. This has a positive impact on reduced volumes of discharged contamination from these sources.

Trend in discharging of the polution from significant resource into watrercourses in Pohronie loaded area



Source: SHMI

- **Waste management**

Balance of waste generation

Total production of waste in the area during 2004-2005 showed a rising trend, due to an increased production of hazardous, municipal, and other waste categories. Other waste had a decisive impact on total production of waste in the area, especially in 2005.

Waste production in the Pohronie loaded area

Sort of waste	Waste Production (t)		
	2004	2005	2006
Hazardous waste	13 996.49	21 758.15	23 138.28
Other waste	236 245.91	695 661.34	278 010.90
Municipal waste	50 331.90	55 030.91	61 178.36
Waste production in total	**300 574.30**	**772 450.40**	**362 327.56**

Source: SEA, SO SR

Balance of waste generation

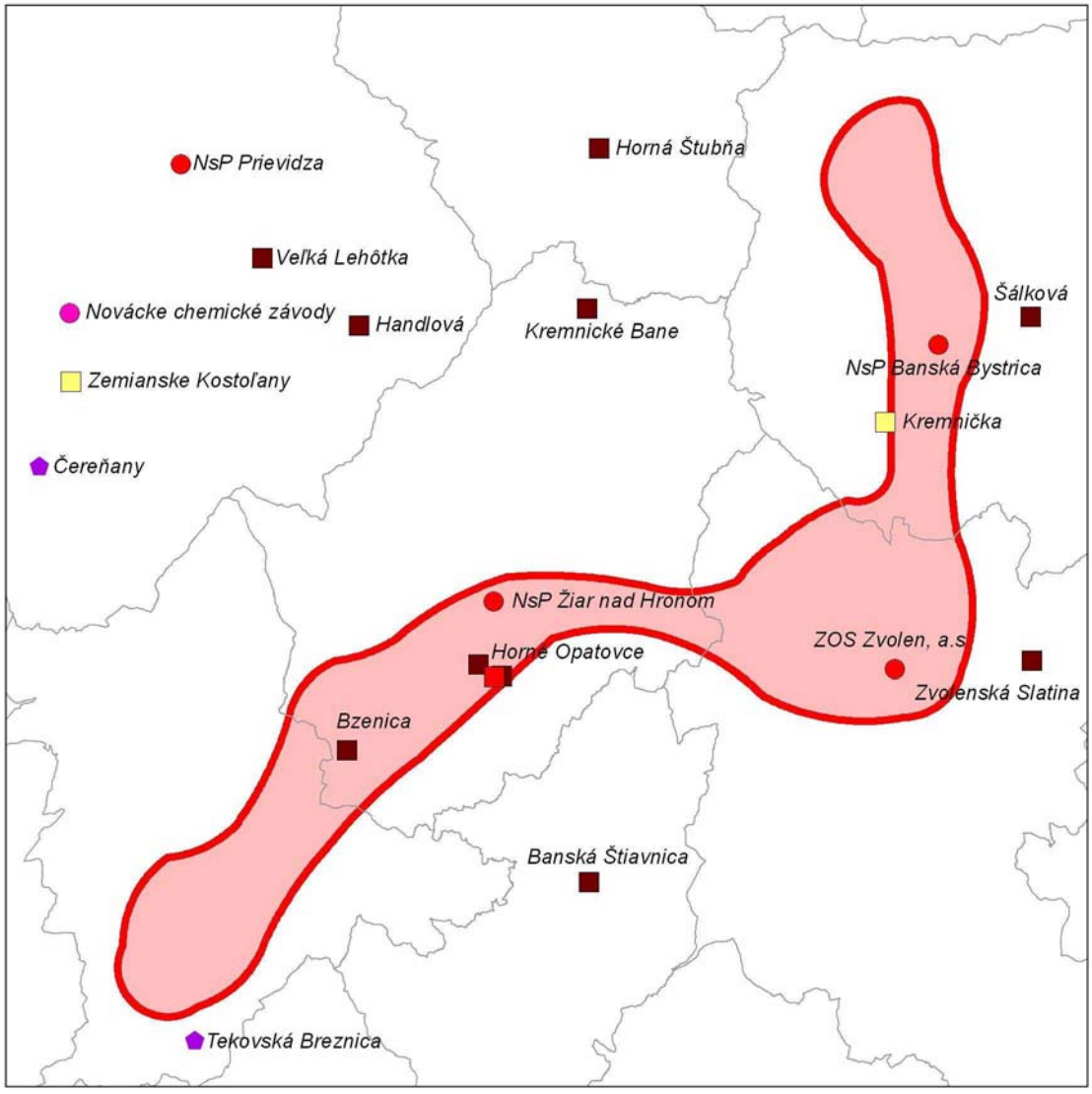
The most frequent form of waste disposal was through other ways – about 40 % of annual production, while 21 % of annual production was disposed of at landfills, and 27 % of annual production was reclaimed. Other waste handling for the monitored period varied. While in 2004, landfills were the dominant waste disposal form – as much as 47 %, in 2005, waste reclamation was dominant with 87 %. In 2006, waste was equally reclaimed (41 %) and disposed of at landfills (41 %).

Waste handling activities in the Pohronie loaded area

Waste handling	2004		2005		2006	
	Waste amount (t)					
	Hazardous waste	Other waste	Hazardous waste	Other waste	Hazardous waste	Other waste
Reclamation	4 124.00	79 440.00	4 827.80	606 614.67	5 945.46	114 057.88
Disposal through landfills	2 362.00	40 809.00	4 631.36	56 626.94	6582.60	114 175.71
Disposal through incineration	189.00	5 900.00			262.40	462.73
Biological disposal	1 943.00	125.00	1 624.95	38.77	3 003.68	261.15
Other disposal	5 378.00	109 972.00	10 410.24	31 917.35	7 256.24	47 616.09

Source: SEA

Waste disposal facilities in the Pohronie loaded area in 2006



Source: SEA

Jelšava-Lubeník loaded area

- **Air pollution**

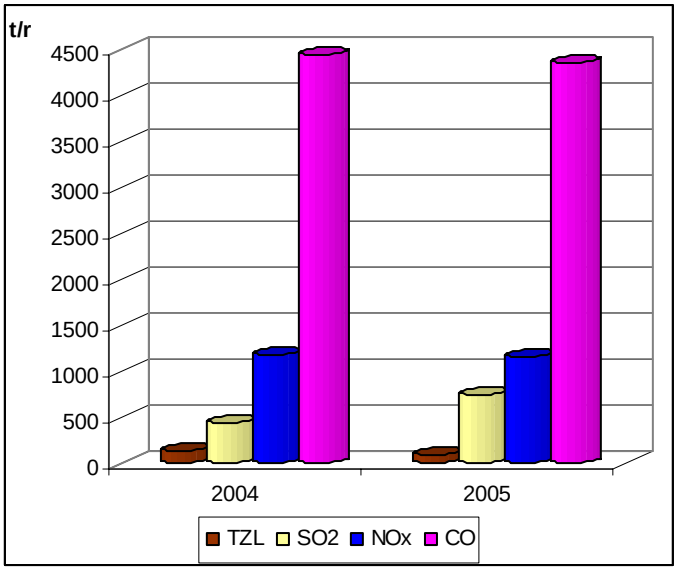
Major contributors to air contamination include the magnesite works, medium and small sources, and small local heating systems. Transportation plays a significant part in pollution (mineral dust, dust from streets taken up and whirled by traffic). Dust from towns and regions contributes to pollution as well.

Five major operators of air pollution sources in Jelšava-Lubenik loaded area

No.	Operator
1.	Slovenské magnezitové závody, Inc., Jelšava
2.	Slovmag Lubeník, Inc., Revúca
3.	Slovak bus traffic, Inc., Revúca
4.	DREVOEXPORT, Ltd., Revúca
5.	RETES, Ltd., Revúca

Compared to 2004, the volumes of emissions in the area show a slightly decreasing trend.

Emission volumes in Jelšava-Lubeník loaded area in the years 2004, 2005



t/r – tons/year
TZL – PM

Source: SHMI

In terms of local air pollution in 2006, the pollution limit for sulphur dioxide was not exceeded for hour, nor for daily values for protection of human health. Neither in case of nitrogen dioxide was this value exceeded. PM_{10} particles exceeded the permitted number of exceeding times, with 85 exceeding episodes for the 24-hour limit value. Annual lead concentration shows a diminishing trend and does not exceed the limit values. Alarm threshold of ground ozone in the area did not register a single exceeding episode. Information threshold in 2006 was exceeded three times.

There was defined an air quality management zone for the territories of Jelšava, Lubeník, Chyžné, Magnezitovce, Mokrá Lúka, and Revúcka Lehota to monitor the PM_{10} pollutant.

- **Surface water contamination**

The Muráň water course flows through the area. Water quality falls into the I.-IV. categories for individual indicator groups and has not changed, compared to the previous year. Water quality has been negatively affected by industrial run-off water from residential areas, mainly outside the loaded area. These include especially WWTPs in towns and villages and agricultural activities. The most adverse situation is in the microbiological indicators group (E) and has been caused by great volumes of the coliform bacteria.

Surface water quality in the Bratislava loaded area

Watercourse	Sampling site	Indicator groups and quality categories																	
		A			B			C			D			E			F		
		2004	2005	2006	2004	2005	2006	2004	2005	2006	2004	2005	2006	2004	2005	2006	2004	2005	2006
Muráň	**Bretka**	II	II	II	II	II	II	III	III	III	III	II	II	IV	IV	IV		IV	I

Source: SHMI

- **Ground water contamination**

Ground water quality within the loaded area has been monitored for the major water management area of alluvial sediments in Slaná, and Muránska plane, at 1 object of the monitoring network (1 well of the basic SHMI network). The most frequently exceeded indicators include total Fe and Mn; however, recently the number of the indicators with recorded excessive limit values decreased.

- **Sources of water contamination**

There is no major water contamination source in terms of volumes of discharged contamination in the SR. Discharged contamination from industrial premises in Lubeník and Jelšava is the biggest contributor affecting water contamination.

- **Waste management**

Balance of waste generation

Total production of waste in the area during 2004-2006 showed a rising trend, due to an increased production of hazardous, municipal, and other waste categories. Municipal and other waste had a decisive impact on total production of waste in the area.

Waste production in Jelšava-Lubeník loaded area

Sort of waste	Waste Production (t)		
	2004	**2005**	**2006**
Hazardous waste	68.43	818.82	80.55
Other waste	2 309.71	4 043.09	3 310.60
Municipal waste	4 385.20	5 035.07	5 804.90
Waste production total	**6 763.34**	**9 896.98**	**9 196.05**

Source: SEA, SO SR

Waste handling

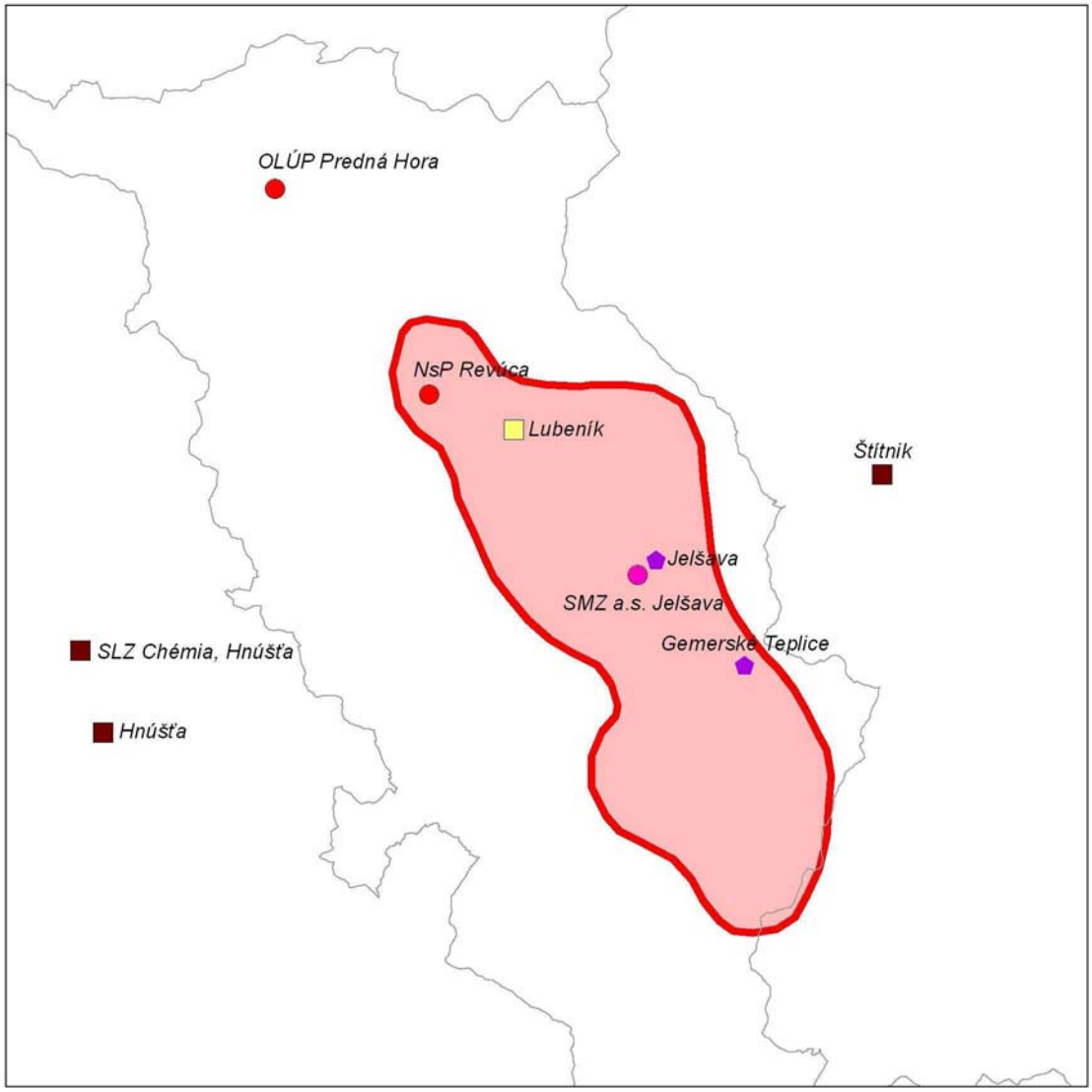
Individual waste-handling approaches in the area show varying characteristics. Reclamation of hazardous waste and other waste showed a fluctuating trend. While in 2004, there was reclaimed 71 % of annual production of hazardous waste, in 2005 it was only 6 %, and in 2006, it grew to 52 %. Reclamation of other waste category shows a similar trend. In 2004, there was reclaimed 48 % of annual production of other waste, in 2005 it grew to 74 %, and in 2006, it fell to 34 %. Approaches to disposal of hazardous waste and other waste included alternatively also other disposal approaches, biological elimination, growing trend in landfills of other waste, and growing trend in incineration of hazardous waste.

Waste handling activities in Jelšava-Lubeník loaded area

Waste handling	2004		2005		2006	
	Waste amount (t)					
	Hazardous waste	Other waste	Hazardous waste	Other waste	Hazardous waste	Other waste
Reclamation	48.00	1 114.00	51.07	2 966.66	41.87	1 123.97
Disposal through landfills	4.0	88.00	0.20	932.71	11.66	2 123.78
Disposal through incineration	7.0	12.00	22.93	9.96	15.88	6.98
Biological disposal	0.0	485.00	743.49	0.0	7.88	0.00
Other disposal	9.0	611.00	1.07	133.73	3.26	55.89

Source: SEI

Waste disposal facilities in Jelšava - Lubeník loaded area in 2006



Source: SEA

Rudniansko-gelnická loaded area

- **Air pollution**

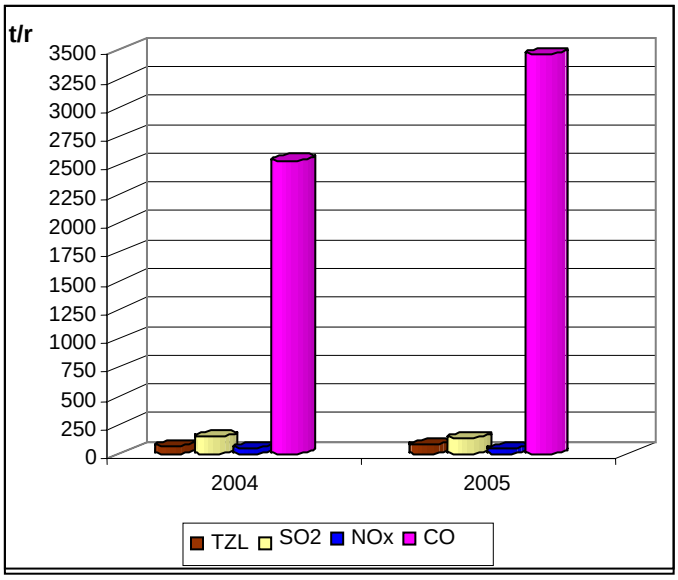
Concentration level of air pollution has been affected by small and middle-sized sources, transportation (diesel engines, busses, trucks) and mineral dust from the urban environment (construction works – insufficient cleaning), and from the regional environment.

Five major operators of air pollution sources in Rudniansko-gelnická loaded area

No	Operator
1.	Calmit, Ltd., Bratislava, operation Margecany
2.	KOVOHUTY, Inc., Krompachy
3.	Prakovská steel corp., Ltd., Prakovce
4.	Zlieváreň SEZ, Inc., Krompachy
5.	POLYTOP SNV, Ltd., Spišská Nová Ves

In 2005, CO emissions in the area increased by almost 1 000 t in 2005, compared to 2004.

Emission volumes in Rudniansko–gelnická loaded area in the years 2004, 2005



t/r – tons/year
TZL – PM

Source: SHMI

In terms of local air pollution in 2006, the pollution limit for sulphur dioxide was not exceeded for hour, nor for daily values with greater number than the limit value for protection of human health. Neither in case of nitrogen dioxide was this value exceeded. PM_{10} particles exceeded the permitted number of exceeding times, with 41 exceeding episodes for the 24-hour limit value for the particular pollutant. Relatively high lead concentrations were recorded in 2006 at the Krompachy, Lorenzova station. Number of episodes of exceeded information threshold and alarm threshold shows a falling trend, compared to 2005. Ground ozone concentrations grow with increasing altitude. Average eight-hour ozone concentraton in the area at the Kojšovská hoľa station exceeded the 25-days/3 years limit.

There was defined an air quality management zone for the territory of Krompachy to monitor the PM_{10} pollutant.

- **Surface water contamination**

Hornad and its tributaries (Hnilec, Rudniansky brook, Slovinský brook, and Smolník) in the area are contaminated by heavy metals as the consequence of a long-term mining and treatment activities in the watershed. Heavy metal concentrations still persist in the streams of the IV. and V. quality categories. Classification of water courses into the V. quality category in 2006 was the consequence of water reaction (pH) in the basic mechanical-chemical indicator group (B), volumes of the coliform bacteria in the microbiological indicators group (E), and the content of Hg and Cu in the micropollutants group.

Surface water quality in Rudniansko-gelnická loaded area

Water-course	Sampling site	Indicator groups and quality categories																	
		A			B			C			D			E			F		
		2004	2005	2006	2004	2005	2006	2004	2005	2006	2004	2005	2006	2004	2005	2006	2004	2005	2006
Hornád	Pod Sp. N. Vsou	III	IV	IV	III	II	II	IV	IV	IV	IV	II	II	IV	IV	IV	IV	III	III
	Kolinovce	III	III	IV	III	III	III	IV	IV	IV	V	II	II	IV	IV	IV	II	III	III
	Pod Kluknavou	II	V	V	III	IV	IV	IV	IV	IV	V	II	II	IV	IV	IV	IV	IV	IV
Rudniansky p.-2	mouth	II	I	II	III	III	III	III	III	III	IV	II	II	IV	IV	IV	III	V	V
Slovinský p.	mouth	III	I	I	III	III	III	III	III	III	III	II	II	V	V	V	III	III	III
Smolník - 1	mouth	I	I	III	V	V	V	II	II	II	III	II	II	II	II	II	V	V	V
Hnilec	Pod Mníškou	I	II	III	V	I	III	II	II	II	II	II	II	IV	IV	IV	III	III	III
	Prítok do VN Ružín	II	I	I	III	I	I	II	III	III	II	II	II	V	IV	IV	III	III	III

Source: SHMI

- **Ground water contamination**

Ground water quality within the loaded area has been monitored for the major water management area of alluvial sediments in Horná from Spišské Vlachy to Družstevná pri Hornáde, at 1 object of the monitoring network (1 well of the basic SHMI network). Recently, episodes of exceeded limit values for the indicators of total Fe, and Al were recorded only at the Kolinovce facility. All other indicators did not exceed the set limits.

- **Sources of water contamination**

There is no major water contamination source in terms of volumes of discharged contamination in the SR. Discharged contamination from the WWTP Spišská Nová Ves is the biggest contributor affecting water contamination.

- **Waste management**

Balance of waste generation

Total production of waste in the area during 2004-2006 showed a fluctuating trend, due to the production of other waste categories that have has a decisive effect on total production of waste within the area. Production of municipal waste in the area did not show major changes.

Waste production in Rudniansko-gelnická loaded area

Sort of waste	Waste Production (t)		
	2004	2005	2006
Hazardous waste	1 452.81	1 385.00	2 019.74
Other waste	34 699.48	22 128.52	44 696.36
Municipal waste	7 689.90	7 381.38	7 631.65
Waste production in total	**43 842.19**	**30 894.90**	**54 347.75**

Source: SEA, SO SR

Waste handling

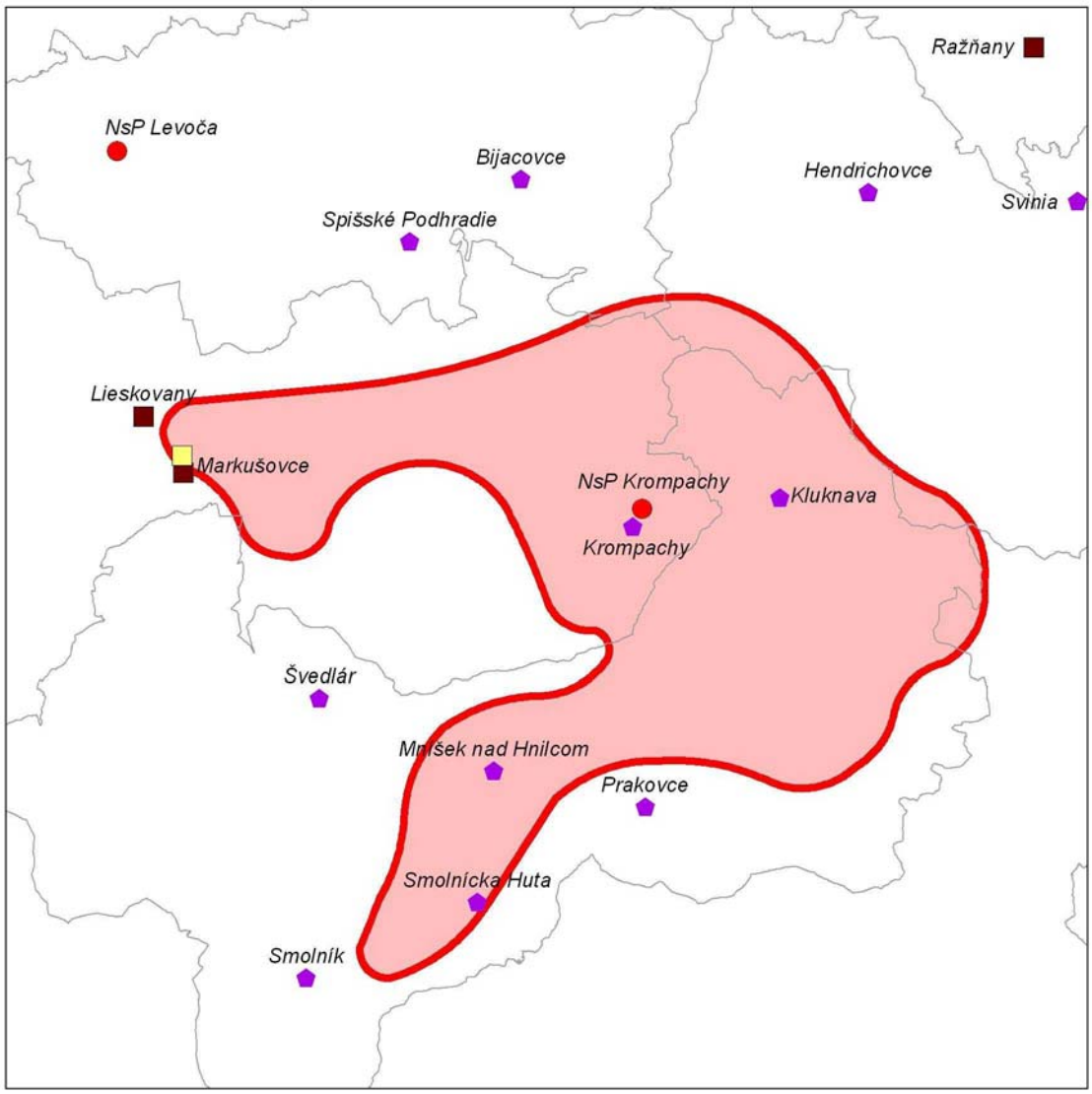
Waste reclamation was the most frequent waste disposal approach in the area. About 61 % of annual production of hazardous waste was disposed of through reclamation, while for other waste it was within the interval of 32-88 %. Approaches to waste disposal included mostly other approaches to waste disposal, with less degree of landfills and incineration. About 3.5 % of annual production of hazardous waste was disposed of at landfills, together with approximately 4 % of annual production of other waste category. Approximately 10 % of hazardous waste was disposed of through incineration.

Waste handling activities in Rudniansko-gelnická loaded area

Waste handling	2004		2005		2006	
	Waste amount (t)					
	Hazardous waste	Other waste	Hazardous waste	Other waste	Hazardous waste	Other waste
Reclamation	821.00	30 349.00	808.60	6 974.51	1 402.71	28 360.22
Disposal through landfills	30.0	2236.00	63.56	401.31	88.84	1 911.49
Disposal through incineration	65.0	170.00	237.45	99.77	116.52	78.44
Biological disposal	6.0	612.00	232.15	1 105.50	87.22	0.00
Other disposal	531.00	1 332.00	43.03	13 547.24	324.49	14 346.22

Source: SEA

Waste disposal facilities in Rudniansko-gelnická loaded area in 2006



Source: SEA

Košice-Prešov loaded area

♦ **Air pollution**

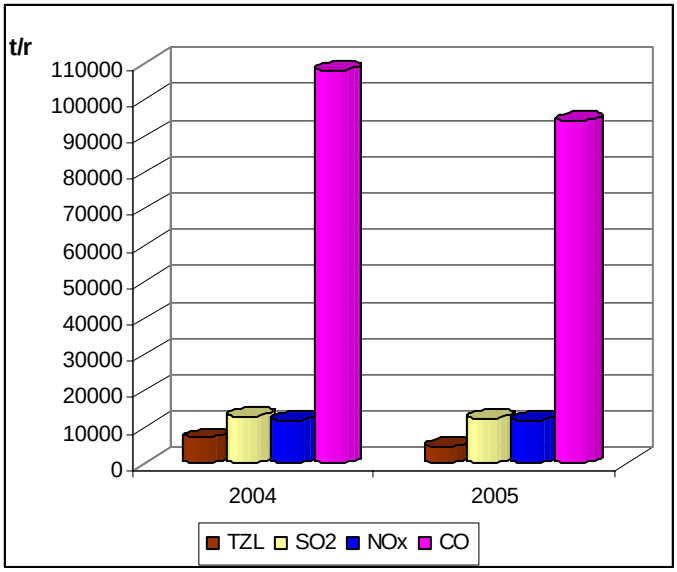
Air pollutants originate mainly from large sources, especially metallurgic, mechanical, chemical, electrotechnical, foor-processing, and fuel industries, as well as from mineral exploitation activities. Other local pollution sources include mainly transportation, suspension and re-suspension of particles from insufficiently clean roads, construction sites, landfills of powder material, heating of houses with solid fuels, and agriculture.

Five major operators of air pollution sources in Košice-Prešov loaded area

No.	Operator
1.	U.S.Steel Košice, Inc., Košice
2.	Carmeuse Slovakia, Ltd., plant Lomy - lom Včeláre Dvorníky - Včeláre
3.	Kronospan Slovakia, Ltd., Prešov
4.	Carmeuse Slovakia, Ltd., plant Lomy - lom Včeláre Dvorníky - Včeláre
5.	TEKO, Inc., Košice

In 2005, there was a slight reduction in all basic pollutants.

Emission volumes in Košice-Prešov loaded area in the years 2004, 2005



t/r – tons/year
TZL – PM

Source: SHMI

In terms of local air pollution in 2006, the pollution limit for sulphur dioxide was not exceeded for hour, nor for daily values with greater number than the limit value for protection of human health. Neither in case of nitrogen dioxide was this value exceeded.

Episodes of exceeded 24-hour limit value for the PM_{10} pollutant were recorded at all four stations. Emitted lead volumes from year to year show a falling tendency, and lead does not pose a major problem nowadays. No ground ozone alarm thresholds were exceeded within the area. Exceeding of the information threshold has not been recorded since 2004. Target values for protection of human health are currently exceeded only at the Košice monitoring station. Other stations show no exceeded average value of 25 days per three years.

There was defined an air quality management zone for the territories of Košice, Bočiar, Haniská, Sokoľany, Veľká Ida, urban territory of Prešov, Solivar, and territories of Šalgovník, Nižná Šebestová, and Ľubotice to monitor the PM_{10} pollutant.

♦ **Surface water contamination**

Hornád and Torysa, together with their tributaries, are the major water courses in the area. Hornád is locally loaded with run-off and industrial waste water produced by the city of Košice. Water quality is of

the IV.-V. category for most indicators. Torysa sends into the Hornád river water of the II.-IV. quality categories. Water quality in Torysa has been adversely influeced by its tributary Sekčov with a high content of NEL_{UV} in the micropollutants group (F). Water quality situation at the sampling site of Torysa-Kednice has not changed, compared to the previous year. This suggests that contamination in the given area of the river is not increasing. Classification of Hornád into the V. quality category in 2006 was the consequence of COD_{Cr} in the oxygen indicators group (A) varying volumes of the P forms in the nutrients group (C), volumes of the fecal streptococci in the microbiological indicators group (E), and the content of NEL_{UV} and Al in the micropollutants group.

Western part of the loaded area is drained into the Bodva water course and its triburaties (Ida and Turňa). Water quality in these water courses belong to the the II.-V. categories. The whole Bodva watershed is typical for its low water potential. Classification of Bodva and Ida into the V. quality category in 2006 was the consequence of COD_{Cr} in the oxygen indicators group, volumes of the fecal streptococci in the microbiological indicators group, and the content of Al in the micropollutants group.

Surface water quality in Košice-Prešov loaded area

Watercourse	Sampling site	Indicator groups and quality categories																	
		A			B			C			D			E			F		
		2004	2005	2006	2004	2005	2006	2004	2005	2006	2004	2005	2006	2004	2005	2006	2004	2005	2006
Hornád	Krásna n/H.	II	III	III	III	II	II	II	III	V	IV	II	II	IV	IV	IV			
	Žďaňa	III	IV	III	II	IV	II	IV	IV	IV	III	I	II	IV	IV	IV	IV	V	IV
	Hidasnémeti	III	V	V	V	V	IV	IV	IV	IV	IV	II	III	IV	V	V	IV	IV	V
Torysa	Kendice	III	IV	IV	III	III	III	V	IV	IV	IV	II	II	V	IV	IV	V	IV	IV
	Koš. Olšany	III	IV	IV	III	III	III	IV	IV	IV	III	II	II	V	IV	IV			I
Svinka	Obišovce	II	III	III	III	III	III	II	III	III	II	II	II	IV	IV	IV		V	
Sekčov	Ústie	II	III	III	IV	III	III	III	III	III	V	II	II	IV	IV	IV	IV	IV	V
Sokoliansky p.	Tornyosnémeti	II	II	III	IV	IV	IV	III	V	V	V	II	II	V	V	IV	IV	IV	IV
Ida	Ústie	IV	V	V	II	II	II	III	III	III		II	II	V	IV	IV		III	III
Turňa	Ústie	IV	III	IV	II	II	II	III	III	III		III	III	IV	IV	IV		III	III
Bodva	Hosťovce	IV	V	V	III	IV	IV	III	IV	III		II	II		V	V		IV	V

Source: SHMI

♦ **Ground water contamination**

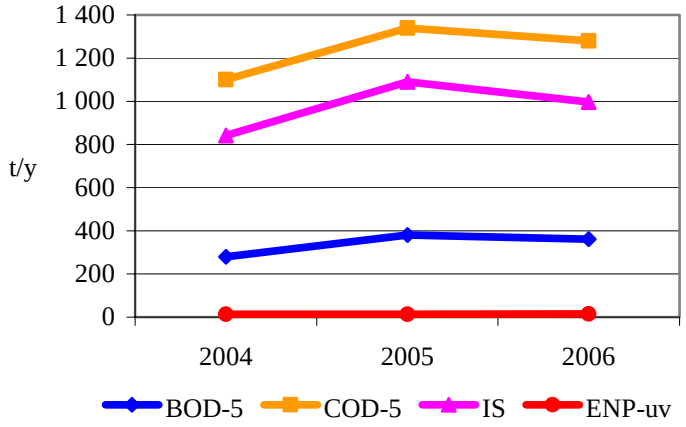
Ground water quality within the loaded area has been monitored for the major water management zones of alluvial sediments of the Hornád river from Družstevná pri Hornáde to the national borded, and in the zone of alluvial sediments of the Bodva river and Slovenský Carst, at 14 facilities of the monitoring network (13 wells of the basic SHMI network, 1 actively used well). Just as in the previous years, the most frequently exceeded indicators include total Fe, Mn, due to an adverse oxygen situation. For anions, recorded exceeded limits included nitrates, sulphates, and chlorides.

Water quality in alluvial sediments of Hornád has not changed significantly over the recent period. Limit-exceeding concentration of trace elements was recorded at Drieňovec – Hlavný station, which suggests a need for increased protection of ground water in the area of Bodva alluvial sediments.

- **Sources of water contamination**

Major water contamination sources of local and national significance include WWTP Košice, and WWTP U.S. Steel, Ltd. Košice. Discharged contamination from public sewerage and industrial premises in Prešov, Moldava nad Bodvou, and WWTP Šaca, is the major contributor to water contamination and the reduced water quality.

Trend in discharging of the polution from significant resource into watercourses in Košice-Prešov loaded area



Source: SHMI

- **Waste management**

Balance of waste generation

Total production of waste in the area during 2004-2006 showed a rising trend, due to the production of other waste categories that have has a decisive effect on total production of waste within the area. Production of hazardous and municipal waste has not shown major changes.

Waste production in Košice-Prešov loaded area

Sort of waste	Waste production (t)		
	2004	2005	2006
Hazardous waste	68 811.16	62 475.89	63 983.21
Other waste	2 115 996.82	1 969 592.96	3 059 699.17
Municipal waste	106 351.80	100 071.29	122 442.51
Waste production in total	**2 291 159.78**	**2 132 140.14**	**3 246 124.89**

Source: SEA, SO SR

Waste handling

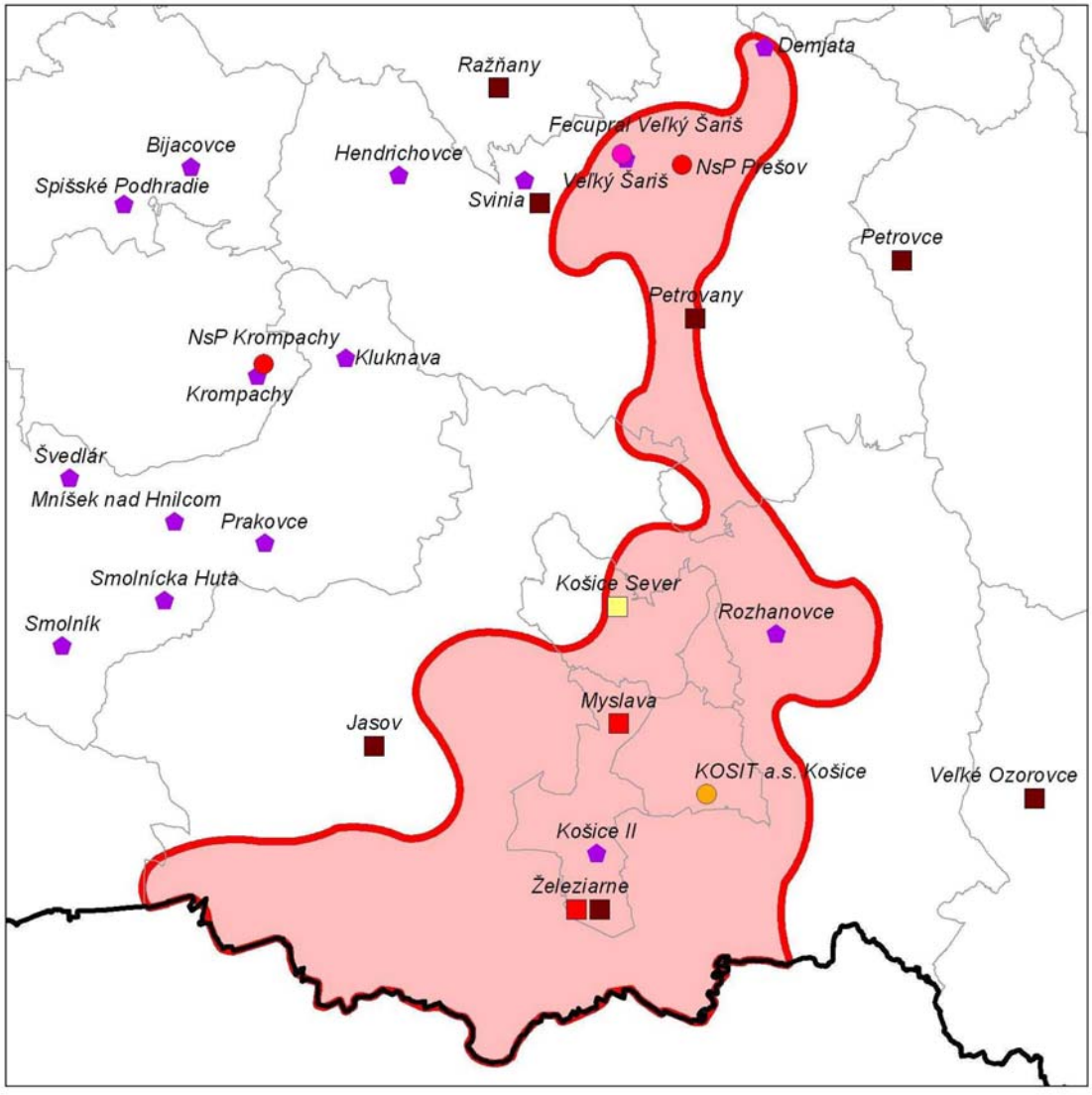
The most frequent approach to handling hazardous waste in the area was waste disposal at landfills, with about 64 % of the annual production, while in 2006, 77 % of waste was disposed of through this approach. About 3.5 % of annual waste production was incinerated. 25 % was disposed of through other approaches, dropping to 1.8 in 2006. Other waste category was disposed of mainly through landfills (about 33 % of annual production) and other approaches to waste disposal gradually dropping from 41 % to 6 % in 2006. The area recorded a gradual increase in hazardous waste reclamation from 7 % to 16 % in 2006, and from 13 % to 68 % for other waste category in 2006.

Waste handling activities in Košice-Prešov loaded area

Waste handling	2004		2005		2006	
	Waste amount (t)					
	Hazardous waste	Other waste	Hazardous waste	Other waste	Hazardous waste	Other waste
Reclamation	4 842.00	277 548.00	8 750.54	1 214 506.50	10 599.23	2 072 274.41
Disposal through landfills	44 407.00	925 820.00	39 349.14	527 416.32	49 260.07	800 293.08
Disposal through incineration	950.00	4 758.00	5 599.96	6 431.17	928.60	4 713.61
Biological disposal	1 157.00	45 642.00	1 736.99	1 665.51	2 037.14	734.77
Other disposal	17 455.00	862 229.00	7 037.35	219 571.79	1 158.31	181 682.81

Source: SEA

Waste disposal facilities in Košice-Prešov loaded area in 2006



Waste disposal facilities

- Municipal waste incinerator
- Medical waste incinerator
- Industrial waste incinerator
- Hazardous waste landfill
- Non-hazardous waste landfill
- Inert waste landfill
- Landfill operated under special conditions

Source: SEA

Zemplín loaded area

♦ Air pollution

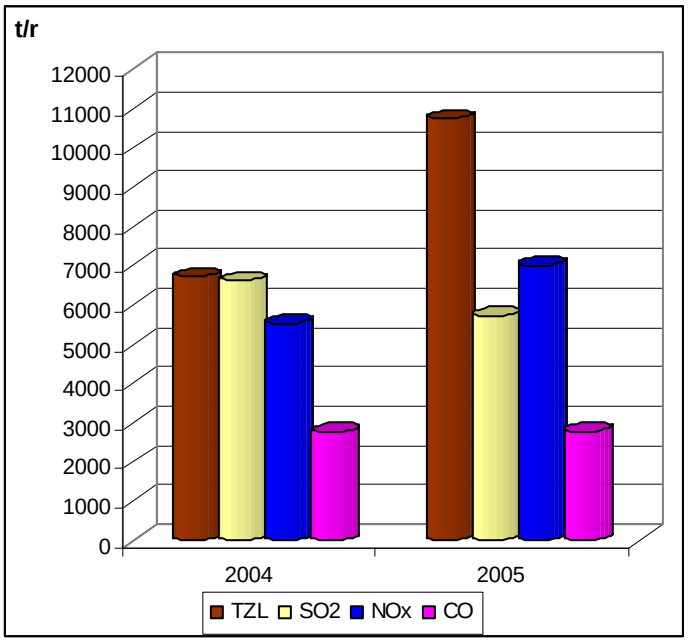
Air pollution is mainly caused by activities of large sources within the power, wood-processing, chemical, and food-processing industries. Air quality has been influenced also by small sources and public heat supply. Contamination by dust includes mineral dust from urban (consruction works – cleaning) and regional contamination.

Five major operators of air pollution sources in Zemplín loaded area

No.	Operator
1.	SE, Inc., Bratislava, Powerplant Vojany I a II
2.	BUKOCEL, Inc., Hencovce
3.	KERKO, Inc., Michalovce
4.	Vranovská brickyard, Ltd., Vranov nad Topľou
5.	Bukoza Preglejka, Inc., Hencovce

In 2005, there was a big increase in emissions of all basic pollutants, with the exception of SO_2, which showed a falling trend.

Emission volumes in Zemplín loaded area in the years 2004, 2005



t/r – tons/year
TZL – PM

Source: SHMI

In terms of local air pollution in 2006, the pollution limit for sulphur dioxide was not exceeded for hour, nor for daily values with greater number than the limit value for protection of human health. Neither in case of nitrogen dioxide was this value exceeded. PM_{10} particles exceeded the permitted number of above-limit recordings at 1 station. Increased lead concentration trend was recorded in Vranov nad Topľov, in 2006.

There was defined an air quality management zone for the territory of Vranocv nad Topľou and the villages of Čemerné and Hencovce to monitor the PM_{10} pollutant.

♦ Surface water contamination

Major water streams in the area include Ondava, with its tributaries of Laborec and Bodrog. Water quality is within the interval of the II. - V. categories for individual indicator groups. Water quality in Laborec is significantly affected by discharged cooling waste water from the Vojňany electric power plant. This has resulted mainly in the increase of temperature and classification of the stream into the III. category for the basic mechanical-chemical indicators group (B). Over years, Trnávka stream has been the most contaminated water courses within the Ondava watershed, as well as the whole of Slovakia. The stream is contaminated by waste water from the city of Trebišov. Classification of water courses into the V. quality category in 2006 was the consequence of COD_{Cr} and O_2 in the oxygen indicators group (A) varying volumes of different P forms in the nutrients group (C), and volumes of coliform and thermotolerant bacteria in the microbiological indicators group (E).

Surface water quality in Zemplín loaded area

Water-course	Sampling site	Indicator groups and quality categories																	
		A			B			C			D			E			F		
		2004	2005	2006	2004	2005	2006	2004	2005	2006	2004	2005	2006	2004	2005	2006	2004	2005	2006
Laborec	Petrovce	II	III	III	II	II	III	III	III	III	III	II	II	IV	IV	IV	III	II	II
	Lastomír	II	III	III	III	II	II	III	II	III	V	II	II	IV	III	III	I	I	I
	Ižkovce	II	IV	IV	IV	III	III	II	II	II	II	II	II	IV	IV	IV	III	III	II
Šíravský k.	mouth	III	III	III	II	II	II	III	II	II	V	II	II	IV	IV	IV		II	
Zálužický k.	Pod Šíravou	II	III	III	IV	II	II	II	II	III	V	III	III	III	III	III			I
Uh	Pinkovce	IV	III	III	IV	III	III	IV	III	III	V	II	III	V	V	V	IV	III	IV
	mouth	III	IV	IV	III	II	III	II	II	II	III	II	II	IV	III	III	IV	III	II
Čierna voda-4	Stretava	III	IV	IV	IV	II	II	III	III	III	V	III	III	III	III	III		III	
Ondava	Nižný Hrušov	II	III	III	II	II	II	II	III	III	III	II	II	IV	IV	IV	IV	III	III
	Brehov	II	III	III	III	II	II	III	IV	IV	III	II	II	IV	IV	IV	IV	IV	IV
Oľka	mouth	III	V		III	III		II	II		IV	II		IV	III				
Topľa	Pod Vranovom	III	II	IV	II	II	II	III	III	III	IV	II	II	IV	IV	IV	IV	III	III
Trnávka – 1	Zemplínske Hradište	IV	V	V	IV	III	III	V	V	V	V	IV	III	IV	V	V	II	IV	
Somotorský kanál	Somotor	V	V	V	IV	III	III	IV	V	V	III	III	III	III	III	III			
Bodrog	Streda nad Bodrogom	III	III	III	IV	IV	III	III	III	II	III	II	III	IV	IV	IV	IV	V	IV

Source: SHMI

◆ Ground water contamination

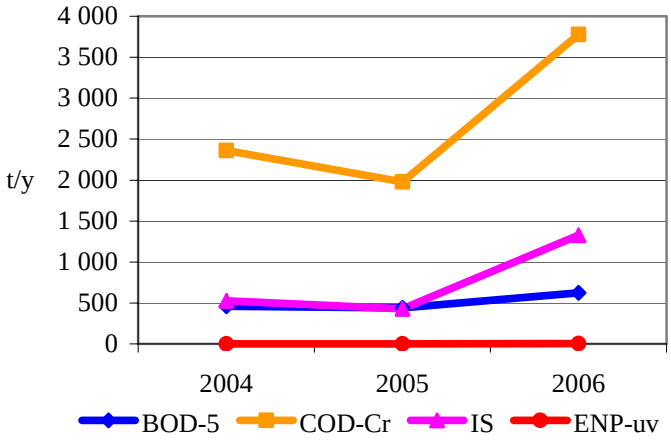
Ground water quality within the loaded area has been monitored for the major water management area of alluvial sediments of Ondava from Domašas to Trebišov and SLánske hills, alluvial sediments of Cirochy from Snina to Humenné and of Laborec from Humenné to Budkovce, and in the area of Medzibodrožie the alluvial sediments of Rožňava at 14 facilities of the monitoring network (12 well of the basic SHMI network, 2 actively used wells). Just as in other areas of the Easter-Slovakia basin, the most frequently exceeded indicators include total Fe, Mn, due to an adverse oxygen situation. Limit

values were exceeded also in case of ammonia ions, nitrates, and COD_{Mn}. Compared to previous time periods, content of trace elements was exceeded at the facility of Vranov nad Topľou in case of As, and at Trebišov – Olšina nd Malčice, in case of Al. Reduction conditions in ground water cause increased contents of a number of indicators (ammonium ions, Fe, Mn).

- **Sources of water contamination**

Major sources of water contamination of the local and national importance include Bukocel, Inc., Hencovce, SE, Inc., Vojňany electric power plant, and a WWTP in Humenné. Besides other factors of contamination, the major contributor to water quality situation is discharged contamination from public sewerages and industrial facilities of Trebišov and Čierna nad Tisou. Discharged contamination from the upper regions of Topľa and Ondava also contributes to a deteriorated water quality.

Trend in discharging of the polution from significant resource into watercourses in Zemplín loaded area



Source: SHMI

- **Waste management**

Balance of waste generation

Total production of waste in the area during 2004-2006 showed a fluctuating trend, due to the production of other waste categories that have has a decisive effect on total production of waste within the area. Production of hazardous waste grew significantly in the area. Production of municipal waste did not show major changes.

Waste production in Zemplín loaded area

Sort of waste	Waste production (t)		
	2004	2005	2006
Hazardous waste	8 404.03	83 725.44	73 549.00
Other waste	541 201.46	398 994.33	495 574.25
Municipal waste	39 697.40	39 188.96	43 954.01
Waste production in total	**589 302.89**	**521 908.75**	**613 077.26**

Source: SEA, SO SR

Waste handling

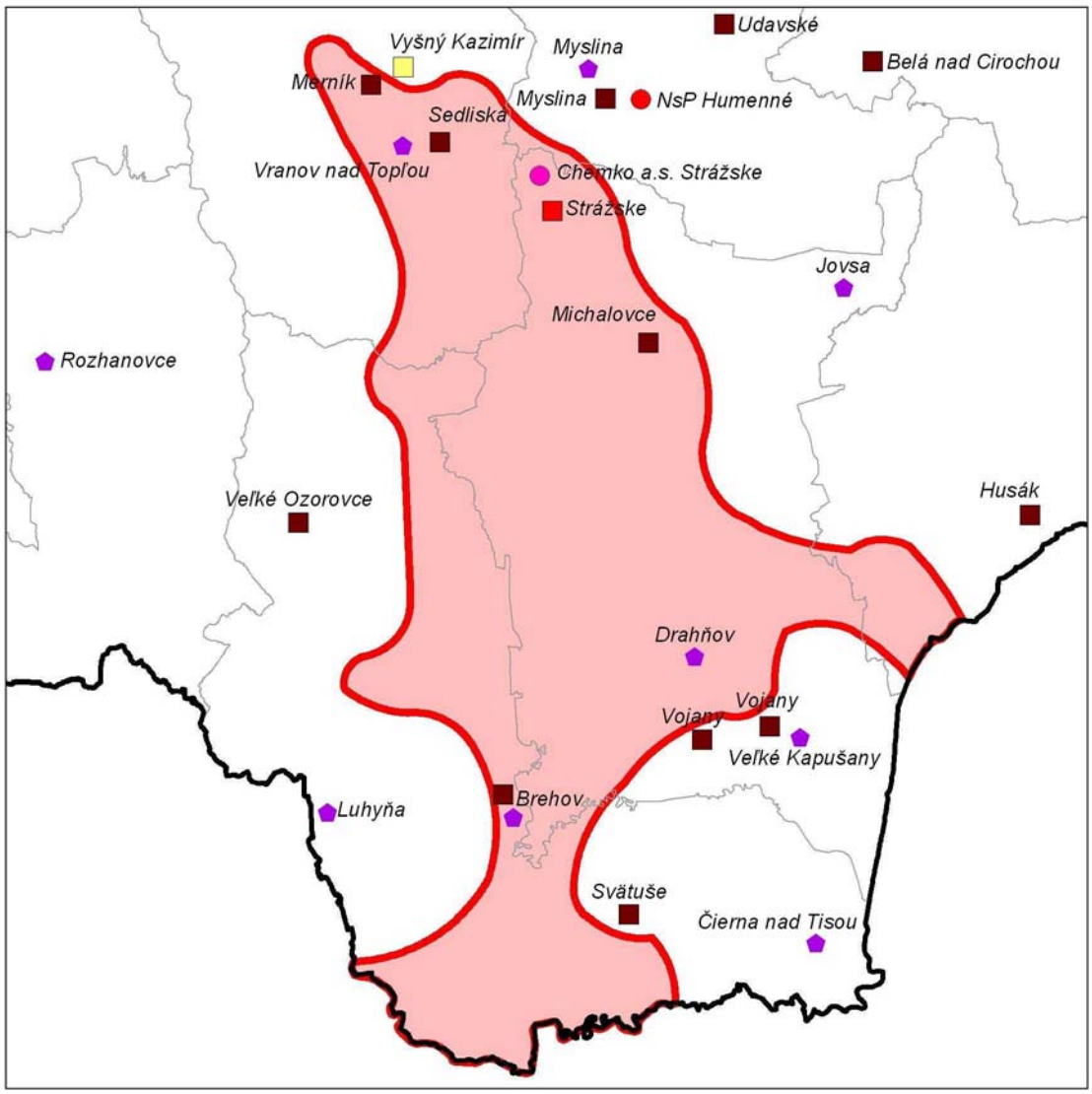
Individual hazardous waste handling approaches in the area show varying characteristics. In 2004, hazardous waste was disposed of through roughly equally distributed disposal approaches, including about 25 % by reclamation, 25 % by landfills, 25 % through biological disposal. and 25 % through other approaches. In 2005, 91 % of hazardous waste was reclaimed. and in 2005, 87 % of annual production of hazardous waste was biologically disposed of. The most frequent waste handling activity for other waste was its disposal through landfills (about 77 %), and reclamation (about 20 %) of the annual production.

Waste handling activities in Zemplín loaded area

Waste handling	2004		2005		2006	
	Waste amount (t)					
	Hazardous waste	Other waste	Hazardous waste	Other waste	Hazardous waste	Other waste
Reclamation	2 328.00	104 732.00	75 436.24	58 888.63	3 005.37	126 371.77
Disposal through landfills	2 558.00	425 417.00	4 327.79	324 057.80	4 125.80	356 247.02
Disposal through incineration	240.00	11.00	204.86	9.82	211.55	10.26
Biological disposal	2 796.00	1.00	2 799.02	6 678.78	64 340.21	29.10
Other disposal	2 810.00	11 040.00	956.86	9 358.98	1 866.08	12 916.11

Source: SEA

Waste disposal facilities in Zemplín loaded area in 2006



Waste disposal facilities

- Municipal waste incinerator
- Medical waste incinerator
- Industrial waste incinerator
- Hazardous waste landfill
- Non-hazardous waste landfill
- Inert waste landfill
- Landfill operated under special conditions

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

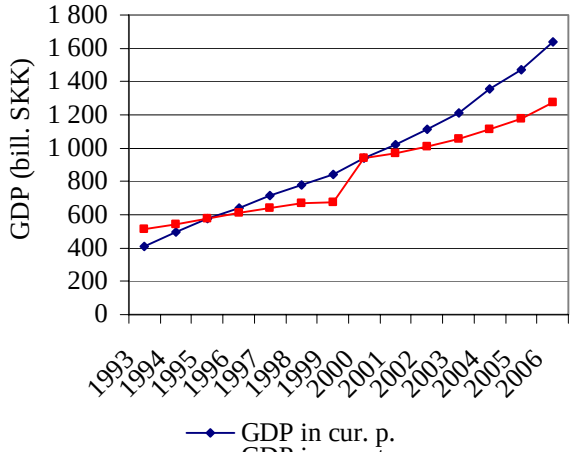
STATE OF THE ENVIRONMENT - CAUSES AND CONSEQUENCES

• ECONOMIC SECTORS AND THEIR IMPACT ON ENVIRONMENT

Economy trend in the SR

Slovak economy continued to grow also in 2006, accompanied by an increased employment rate. In 2006, gross domestic product (GDP) at current prices was 1 636.2 bill. SKK and in reality increased by 8.3 %, compared to the previous year. It was the greatest real year to year increment in the history of Slovakia, as well as the highest real GDP growth in the given year among the OECD countries, and the third highest among EU-27 (higher growth recorded only Latvia and Estonia).

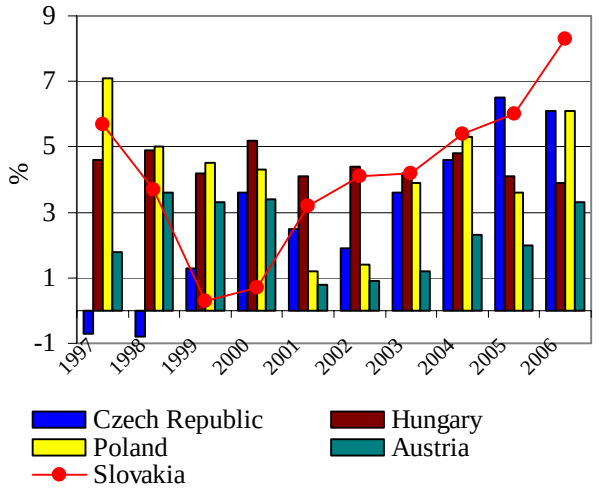
Trends in gross domestic product in SR*



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

Source: SO SR

Growth rate of the real GDP (romr* = 100)



romr = same time period last year

Source: SO SR

GDP per capita in the SR at the purchase power parity (PPP) in 1999 was 48.1 % of the EU-25 average, and its share in 2006 increased to 59.7 %. Greatest regional share of GDP per capita at PPP in 2004 was recorded in the Bratislava region, with the share of 129.3 % of EU-27.

Limited size of domestic market qualifies Slovakia for an intensive cooperation with other countries of the world and for involvement in international trade. More rapid growth of import and export over GDP growth has lead to the increased openness of economy. **Export of goods and services** in 2006 at current prices reached 1 400 bill. SKK and in comparison to the previous year, export of goods and services was accelerated by 23.9 %. **Import of goods and services** in 2006 at current prices reached 1 471.9 bill. SKK and grew by 23 % on the year-to-year basis. In 2006, total export of goods and services to the EU-25 countries was 85.1% of all Slovakia's export.

In 2006, **foreign direct investments (FDI)** to the SR economy were 31.724 bill. SKK, and by the end of 2006, the cumulative volume of foreign direct investments in the SR was 475.9 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.

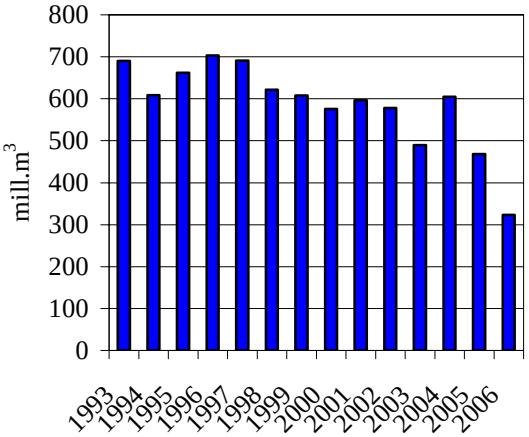
Industry has strengthened its position in the Slovak economy, increasing its **share on GDP generation** in 2006 to 34.1 %. Within the industrial sector, manufacturing production was 87.9 % of the generated GDP, production and distribution of electricity, gas, and water was 11 %, and mineral exploitation was 1.1 %.

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

Compared to other EU countries, energy demand of the Slovak industry is very high. In 2004, share of industry on total energy consumption in Slovakia reached 41 % (in the EU-25 countries it was 28 %).

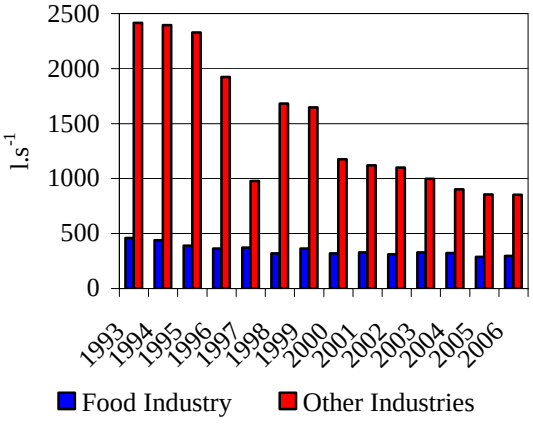
Since 1993, **surface water abstraction** by industry shows a falling tendency. In 2006, surface water abstraction by industry dropped by 53.1 %, compared to 1993. During the year 2006, as much as 81.9 % of total abstractions were industrial. Trends in **underground water abstraction** by industry show analogical tendency.

Development in consumption of surface water in industry



Source: SHMI

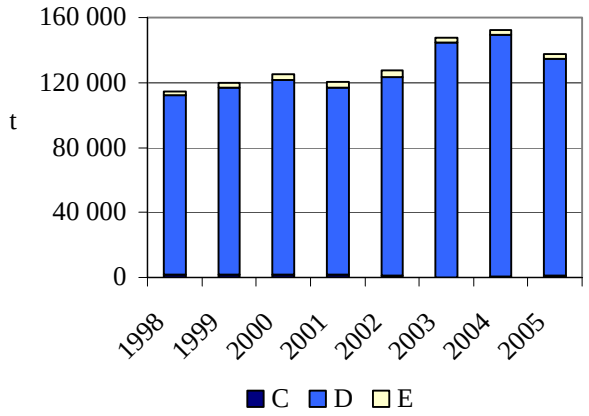
Advancement in underground water consumption in industry



Source: SHMI

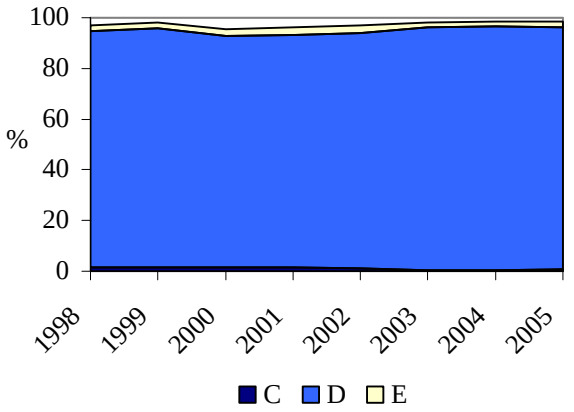
CO emissions from industry in 2005 made up as much as 98.4 % of large-size and middle-size stationary sources and emissions **increased** by 19.6 %, compared to 1998. **SO_2 emissions** from industry in 2005 made up as much as 99.2 % of large-size and middle-size stationary sources and emissions **decreased** by 45.5 %, compared to 1998.

CO emissions trend from stationary industrial sources



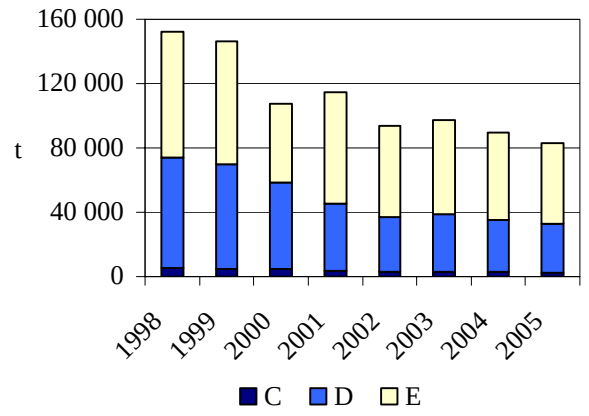
Source: SHMI

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



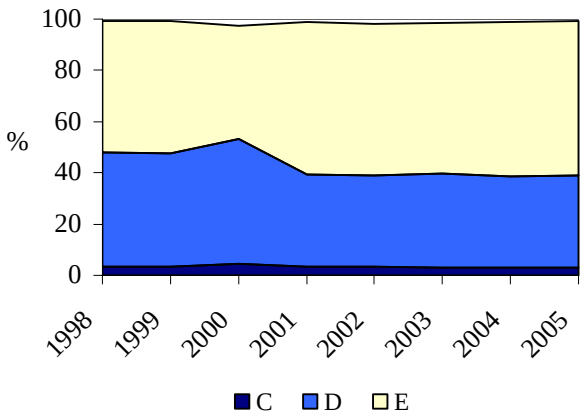
Source: SHMI

SO_2 emissions trend from stationary industrial sources



Source: SHMI

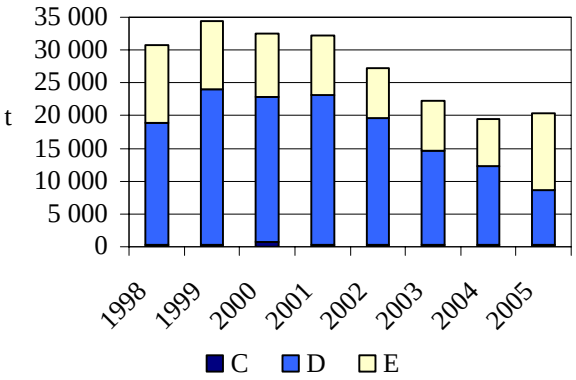
Share of the SO_2 emissions from stationary industrial sources on the overall SO_2 emissions



Source: SHMI

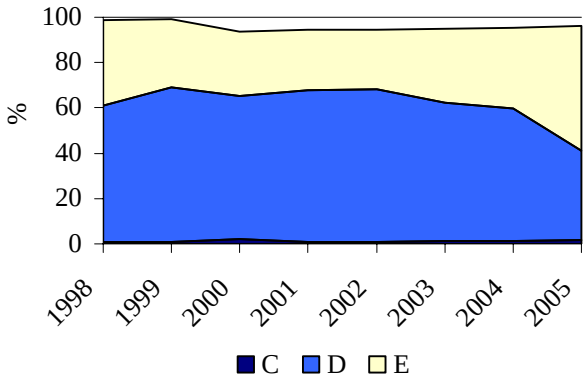
NO_x emissions from industry in 2005 made up as much as 96.3 % of large-size and middle-size stationary sources and emissions **decreased** by 34.4 %, compared to 1998. **SPM emissions** from industry in 2005 made up as much as 96.3 % of large-size and middle-size stationary sources, and emissions **decreased** by 33.9 %, 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

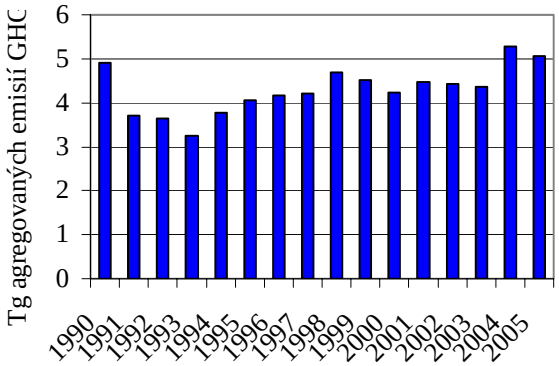


Source: SHMI

Heavy metal emissions by industry have had a decreasing tendency since 1990. However, in 2005 there was an increase in the Pd, Cd, As, Cu and Zn emissions from incineration processes in industry, as well as in the Hg and Cu emissions from industrial technologies, compared to the previous year.

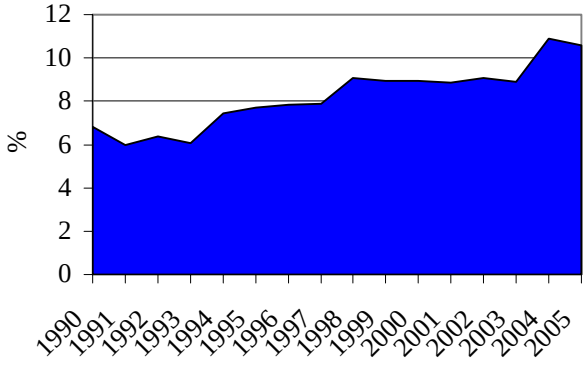
Aggregated greenhouse gases emissions from industrial processes in 1990-2005 had a slightly rising trend. Compared to 1990, in 2005, these emissions from industrial processes increased by 3.2 %.

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 1999-2006

Extracted mineral	Measure unit	1999	2000	2001	2002	2003	2004	2005	2006
Brown coal and lignite	kt	4 041.8	3 947.6	3 761.9	3 661.2	3 508.8	3 101.7	2 513.0	2 208.59
Crude oil. including gasoline	kt	60.264	56.892	54.085	51.770	47.943	42.082	33.15	30.52
Natural gas	thous. m^3	218 569	227 038	195 938	200 812	186 797	178 088	150 851	136 881.00
Ores	kt	1 083.7	1 104.0	1 047.5	719.2	706.5	977.8	651.89	741.95
Magnesite	kt	1 423.8	1 535.2	1 573.0	1 464.5	1 640.9	1 668.9	1 555.0	1 467.80
Salt	kt	100.2	101.8	104.0	102.7	104.8	104.3	105.1	122.50
Building stone	thous. m^3	3 473.9	3 540.4	3 881.6	4 478.3	4 503.3	4 527.5	6 016.2	6 309.20
Gravel sands and sands	thous. m^3	2 874.4	2 443.3	2 689.4	2 933.1	3 872.7	3 951.7	4 870.1	5 502.87
Brick clay	thous. m^3	480.3	529.5	442.1	433.4	507.4	591.7	466.8	508.00
Limestone and cement raw materials	thous. m^3	294.1	320.2	302.3	332.7	384.9	569.5	690.6	673.50
	kt	1 398.1	1 419.5	1 614.6	1 547.4	1 649.4	3 479.8	3 743.3	4 131.20
Limestone for special purposes	thous. m^3	200.9	299.4	292.3	833.0	941.4	14.9	28.50	67.00
	kt	320.0	345.0	325.0	0.0	0.0	1 057.5	834.80	1 243.60
High-content limestone	kt	4 603.4	4 176.5	4 211.1	4 356.8	4 093.0	3 767.3	4 053.5	4 393.00
Other raw materials	thous. m^3 (surface)	896.1	983.7	1 026.9	1 216.8	1337.2	567.8	509.1	531.60
	kt (underground)	120.0	127.7	142.3	86.4	86.2	91.6	106.5	115.30
	kt (surface)	0.0	2.4	32.30	31.1	11.8	1 143.9	1 024.0	1 279.29

Source: MMO SR

Brown coal and lignit extraction in 2005 dropped again. Individual mines showed 2 208.59 kt of extracted volumes. This is the lowest extraction volume since 1997. Compared to 2004 the number of workforce in this industry decreased by 5.5 %.

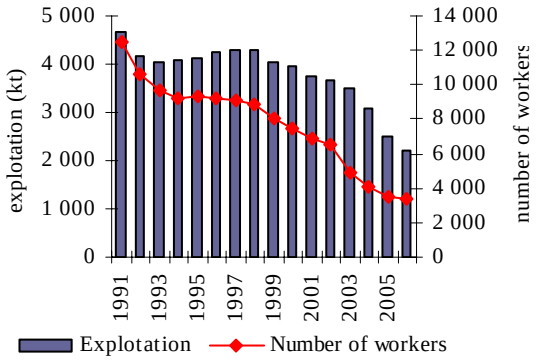
Crude oil, gasoline, and natural gas extraction was also decreased, compared to the previous year. Total extracted volumes included 27 663 t of semi-paraffin crude oil, and 2 843 t of gasoline. Natural gas stores decreased by 136 881 thous. m^3.

Exploitation of **ore minerals** decreased. The Siderit, Ltd. company in Nižná Slaná has the biggest share on all ore volumes, (660.4 kt) The Slovenská banská Ltd. company in Hodruša Hámre, contributed by 19.45 kt, while Rudňany contributed by 62.1 kt.

In 2006, there was a slight increase in exploitation of **non-ore raw material.** However. 1 467.8 kt of *magnesite* was extracted at three significant magnesite deposits (Jelšava, Lubeník, Hnúšťa), which is a reduction by 87.2 kt, compared to the previous year. In 2006, exploitation of *rock salt* (Solivary, Prešov) was at the level of 122.5 kt of salt in salt water, from which 99.4 kt of salt was produced.

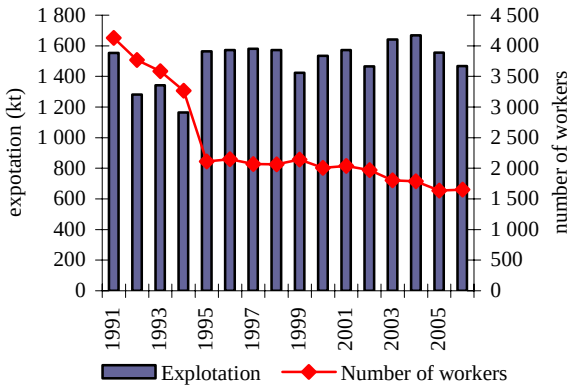
Basic indicators of mineral extraction trend in SR between the years 1991-2005

Trend in brown coal and lignite extraction



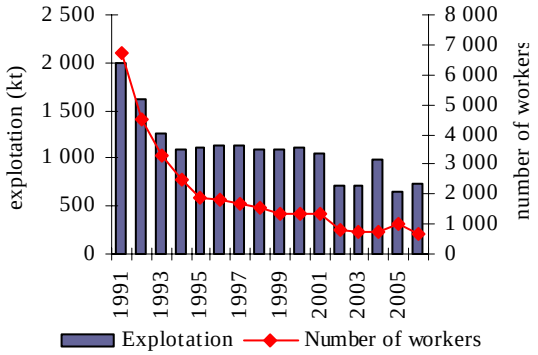
Source: MMO SR

Trend in magnesite extraction



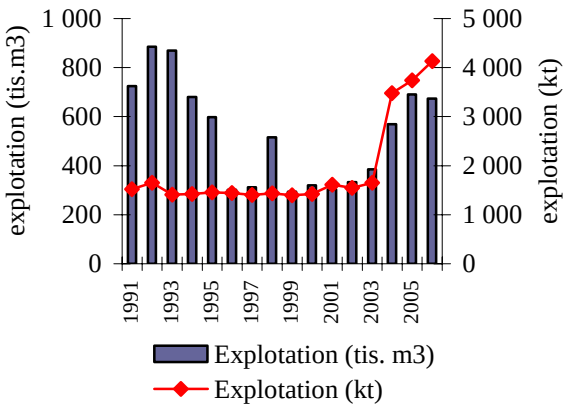
Source: MMO SR

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, 2006, the register had 16 569 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, 2006, there were 104 active (78 in the extraction site, 26 outside the extraction site) and 48 inactive **dumps** (37 in the extraction site, 11 outside of it) left after the extraction of minerals, and also 36 active (23 in the extraction site, 13 outside the extraction site) and 11 inactive (53in the extraction site, and 8 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.

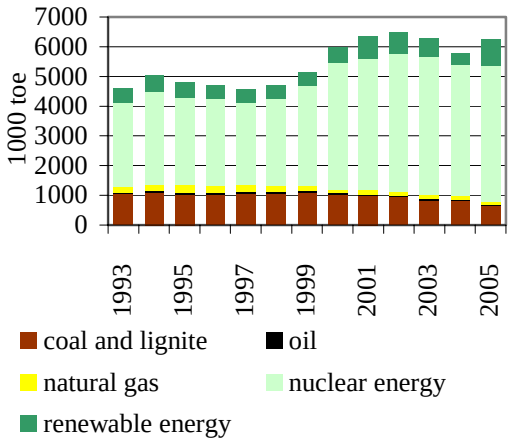
Energy management, Heat production and Gas management

- **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.

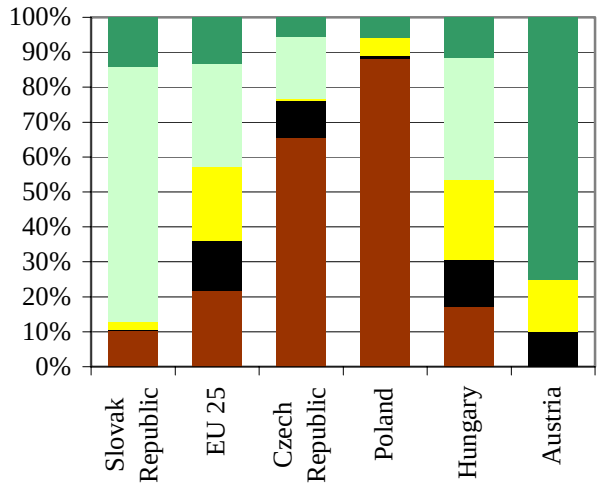
Structure of exploited PES in the SR since 1996 is typical for the increased consumption of gas fuels and renewable energy sources at the cost of consumed solid fuels, also due to more strict emission limits. Utilization of nuclear fuels in recent years plays an exceptionally significant role in the 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 2005 – international comparison

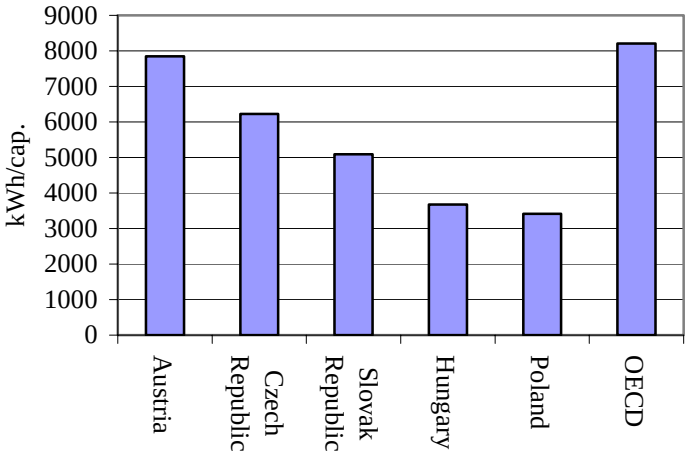


Source: EUROSTAT

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.

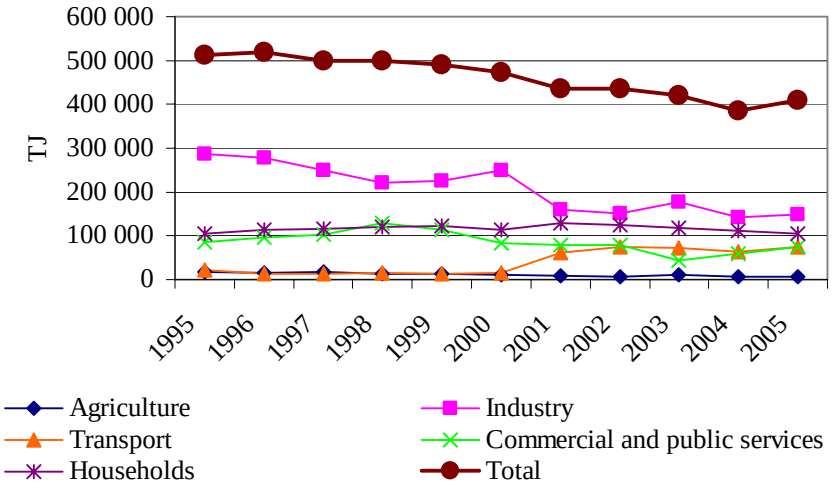
Compared to the developed OECD and EU countries, Slovakia has a low electricity consumption per capita, which is caused mainly by low electricity consumption by households and services. A 1.2% year-to-year growth of total electricity consumption is expected, as well as reduction in electricity production due to shut-downs of production electricity sources. This will mean that electricity production from 2007 to 2010 will not cover the anticipated demand.

Electricity consumption per capita in 2005 – international comparison



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.

Trend of final energy consumption in sectors of economy



Source: SO SR

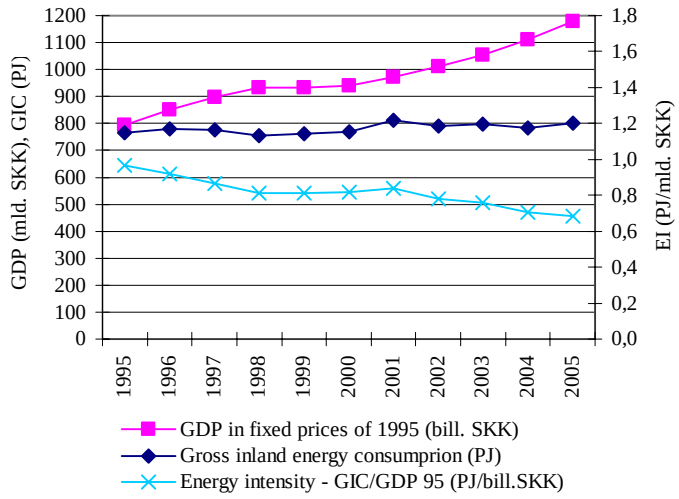
♦ **Energy intensity**

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.

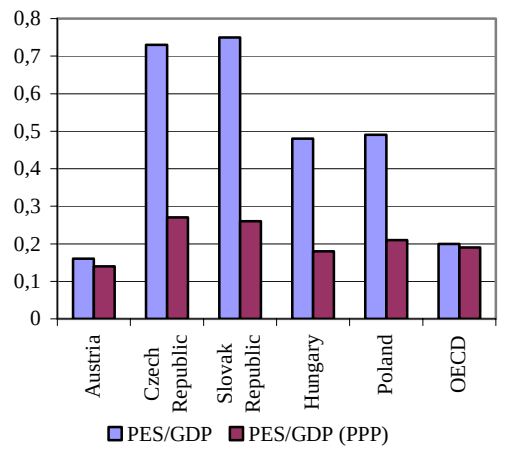
Notwithstanding this positive trend, the EI in Slovakia is still about 1.5-times higher than the average consumption of the OECD countries.

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	2005
Nuclear power plant	2 200	2 200	2 640	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*	3 090*
Hydro power plant	2 417	2 419	2 420	2 470*	2 505*	2 507*	2 518*	2 488*
Total	7 777	7 752	8 205	8 300*	8 074*	8 466*	8 278*	8 218*

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 2005, total produced electricity in the SR energy network dropped on the year-to-year basis by 4.17 % to 29 291 GWh.

Overall domestic electricity consumption dropped on the year-to-year basis by 9.33 % to 26 026 GWh, which is 2 679 GWh less than in 2004. 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 3 265 GWh (export-dominant).

- **Gas management**

Slovak Gas Management Industries in Bratislava is the dominant company on the Slovak gas market, with the greatest market share. In 2006, the company provided services to approximately 1.461 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 2005, the sale of natural gas on the designated Slovak territory in 2006 dropped by 0.57 %.

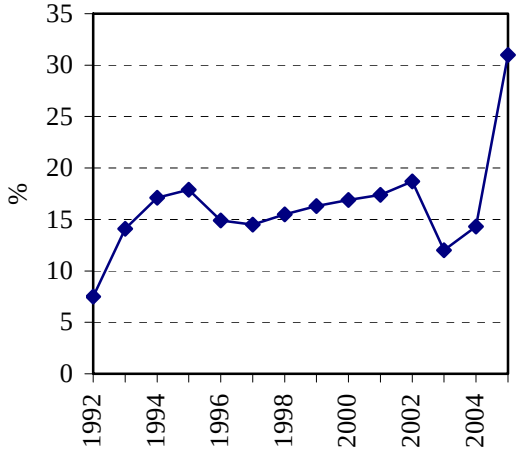
The Slovak gas distribution system is interconnected with the neighboring countries' networks, specifically with Ukraine, Czech Republic and Austria. Capacity of the transport network is more than 90 mill. m^3 annually.

Natural gas consumption in the Slovak Republic in 2006 was 7.2 mil. m^3.

- **Renewable energy sources (RES)**

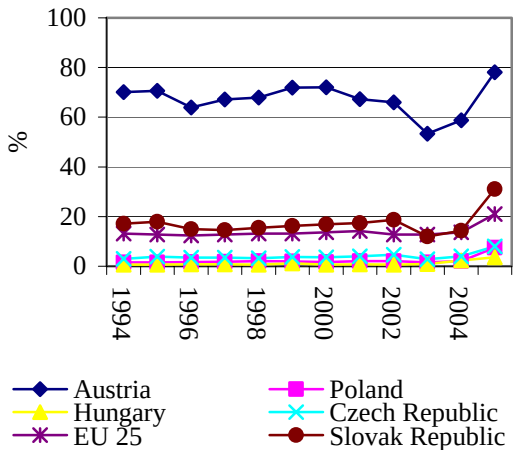
Increase in renewable energy sources‘ extraction represents a significant element in the system of measures introduced to meet the Kyoto Protocol's objectives. Share of electricity produced from the RES (renewable energy sources) on total electricity consumption in 2006 was 16.5 %. Hydro power plants 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 4.4 % share on the gross domestic energy consumption in 2005.

Share of electricity from renewable energy to gross electricity consumption



Source: EUROSTAT

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

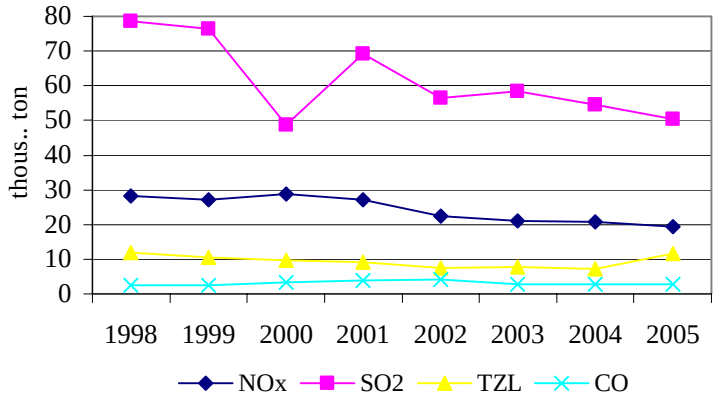


Source: EUROSTAT

- **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 1998-2005 in the SR



Source: SHMI

Power management sector has the most dominant share on the greenhouse gases emissions. In 2005, the share was almost 80 % of total greenhouse gases emissions in the SR. Compared to 2000, total greenhouse gases emissions in the SR in 2006 dropped 36.1 %.

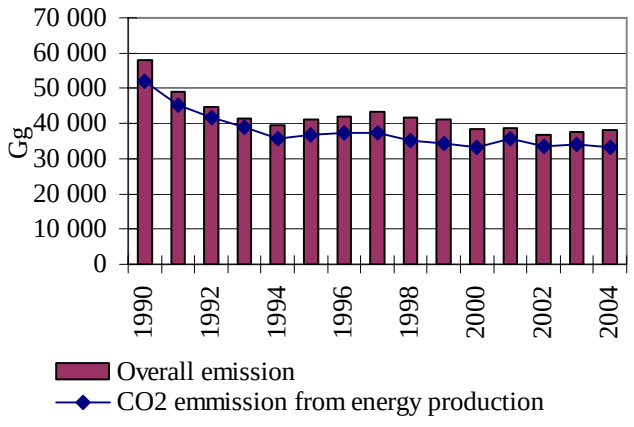
Trend of greenhouse gasses emissions from energy production in the SR (thousand tons)

	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
*** Power management sector**	58.59	51.03	47.23	44.37	41.31	42.60	43.19	43.39	41.66	40.56	37.82	40.64	38.55	39.03	37.81	37.40

*transport included

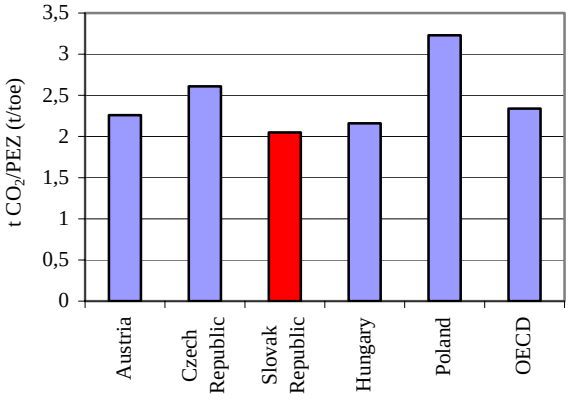
Source: SHMI

Trend of CO_2 emissions from energy production (thousand tons)



Source: SHMI

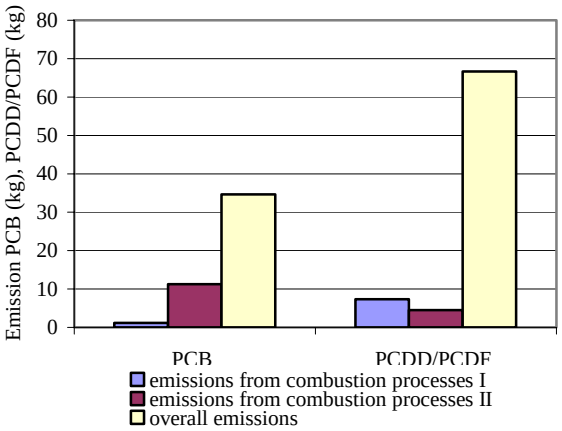
Energy Intensity according to CO_2 in 2004 – international comparison



Source: IEA

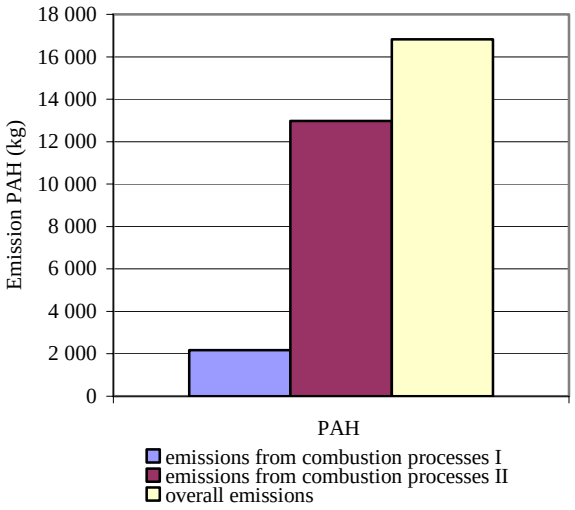
The POP emissions have a falling tendency since 1990. This is caused by a drop in the production and changes to fuels used for household heating. Fluctuations in the PCB emissions (their increase) in 2003 and 2004 relates to the increased consumption of firewood for household heating.

PCB and PCDD/PCDF emissions from energy production in 2005



Source: SHMI

PAH emissions from energy production in 2005



Source: SHMI

Positive trend in the power management sector is recorded mainly by a dramatic reduction to **heavy metals emissions** (Pb, As, Cu, Ni, Zn). In the 2005 emission of Cr and As from power management sector accessed the 10 % share of total emission of heavy metals.

- **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 CODCr (dichromate) indicator, and insoluble substances (IS).

Waste water discharged by energy production in 2006

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	16850.067	108.732	29.424988	295.8140	0.415975
Untreated	64277.791	145.7276	3.258854	26.05199	0
Subtotal	81127.858	254.4596	32.68384	321.8660	0.415975
Waste water from heat production					
Treated	1414.054	11.72186	4.000295	15.94265	0.217793
Untreated	634.129	2.353763	0.088627	0.446672	0.001056
Subtotal	2048.183	14.07562	4.088922	16.38932	0.218849

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

- **Transport share on GDP production**

Sector of transport represented 6.0 % of the GDP production in 2006.

Transport share on GDP production (%)

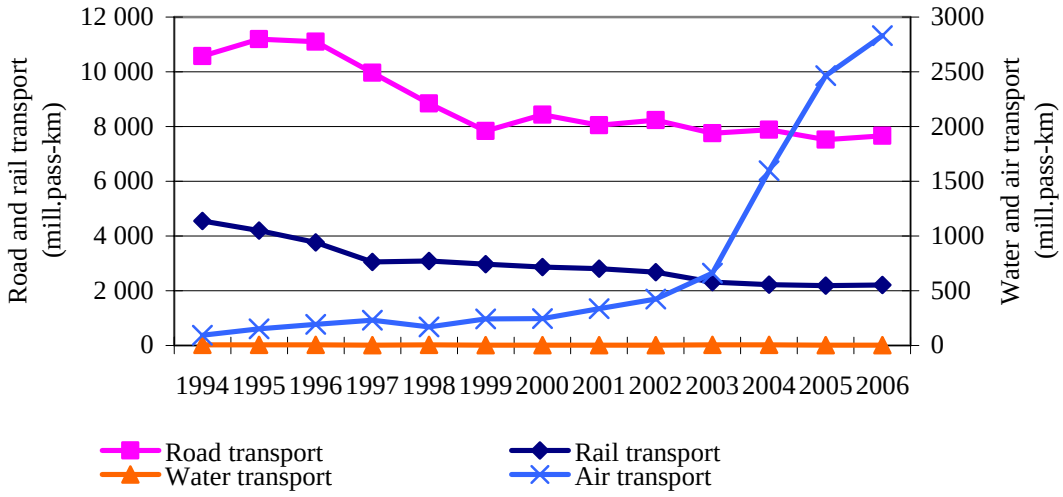
	1993	1996	1999	2000	2001	2002	2003	2004	2005	2006
Transport	6.1	8.3	7.8	7.5	7.6	7.6	7.1	6.8	7.2	6.0

Source: SO SR

- **Passenger and freight transport**

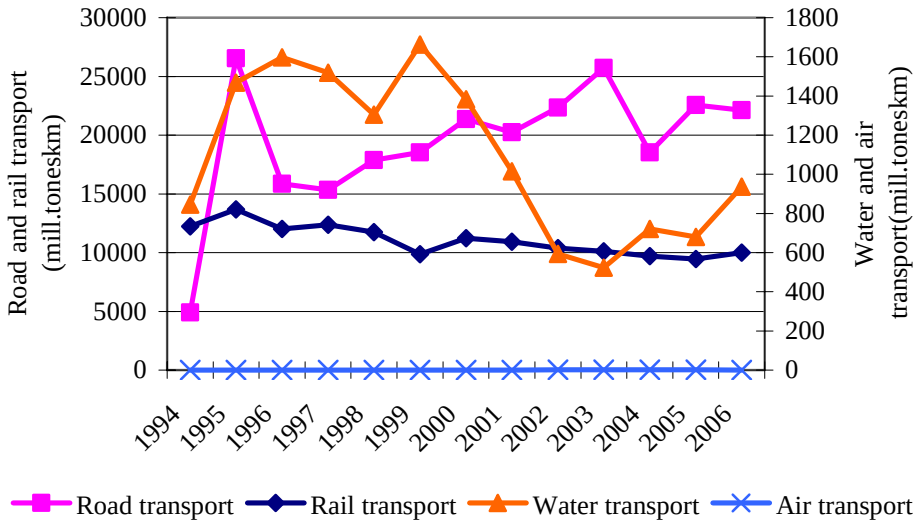
In the area of road and railway passenger transport, the trend of long-term drops in transported passengers and total transport performances contuinued. Compared to 1993, reduction in modal split in road passenger transport was more than 30 %, in case of the railway transport the reduction was even by more than 50 %. Modal split in water passenger transport dropped by more than 40 %. Transport of goods and modal split in road cargo transport grow continually. Road transport shows the greatest share on modal split by cargo transport - appr.60 %. In 2006, modal split by railroad transport dropped by more than 30 %, compared to 1993, while modal split by aquatic cargo transport in 2006 dropped by appr. 11 %, compared to 1993.

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



Source: SO SR

Freight transport demand by mode (mill. tkm)



Source: SO SR

MHD companies of Bratislava, Košice, Prešov, and Žilina operate the municipal mass passenger transport (MHD).

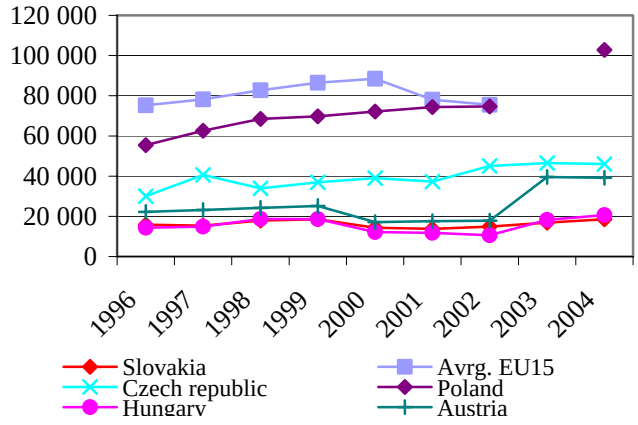
Over the period of 13 years (1993-2006), there was reported a 23.8 % decrease in the number of carried passengers. Compared to 1993, slight growth was recorded only in 1996 (3.3 %) and 1997 (0.3 %). Buss transportation has over the monitored time period been the major player in passenger transport, followed by tram and trolley buss transportation.

Indicators of city transport

Indicator	1993	1996	1999	2000	2001	2002	2003	2004	2005	2006
Total number of transported passengers (ths.)	525 744	543 246	485 472	404 539	373 269	370 018	394 465	383 118	395 064	400 673
Trams										
Transported passengers (ths.)	188 768	143 259	117 714	100 185	98 719	96 553	104 560	104 391	109 101	109 836
Seat kilometres (mill. km)	2 734	1 960	1 888	1 802	1 866	1 780	1 764	1 818	1 822	1 797
Trolleybuses										
Transported passengers (ths.)	43 346	71 689	71 934	62 997	53 167	54 707	59 034	57 688	58 032	59 071
Seat (mill. km)	717	799	1 039	1 029	1 008	1 048	1 110	1 103	1 075	1 085
Buses										
Transported passengers (ths.)	293 629	328 298	295 824	241 357	221 383	218 758	230 871	221 039	227 931	231 766
Seat (mill. km)	4 998	4 265	4 638	4 011	3 996	3 990	3 899	3 881	3 846	3 823

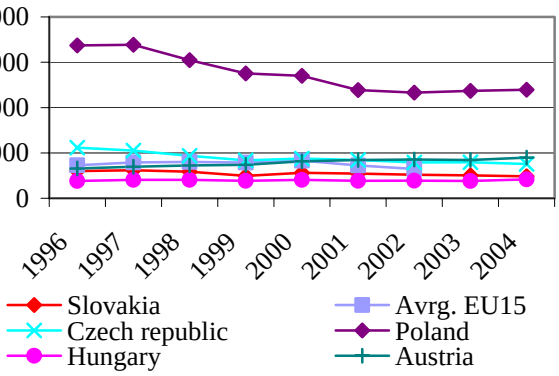
Source: SO SR

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 2006 over the period on 1993-2006 grew by 25 %. Major increase in the number of motor vehicles in 2006 was recorded in the categories of heavy trucks and pickup trucks (grew by 70 %, compared to 1993), and passenger cars (grew by 34 %, 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. 27 % over the last 11 years.

Number of motor-vehicles by individual types (pcs)

Total number of vehicles	1993	1996	1998	2000	2001	2002	2003	2004	2005	2006
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	1 333 749
Trucks and Pick up vans	101 552	97 078	111 081	110 714	120 399	130 334	142 140	140 395	160 089	172 781
Special vehicles	46 121	45 430	43 690	39 188	36 082	34 150	32 033	22 672	22 648	18 708
Road tractors	*	*	1 721	3 281	4 994	6 837	8 851	11 435	14 141	16 475
Buses	12 655	11 321	11 293	10 920	10 649	10 589	10 568	8 921	9 113	8 782
Tractors	65 150	62 810	63 448	64 351	63 422	62 644	61 690	44 080	46 544	43 888
Motorcycles (excl. small)	81 263	79 479	100 891	45 647	46 676	47 900	48 709	51 977	56 366	58 101
Trailers and Semi-trailers (included bus)	167 174	176 246	191 241	201 269	206 627	213 167	218 517	170 491	188 411	188 256
Others	-	-	-	2 226	1 507	1 306	1 161	-	101	535
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**	**1 841 275**

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

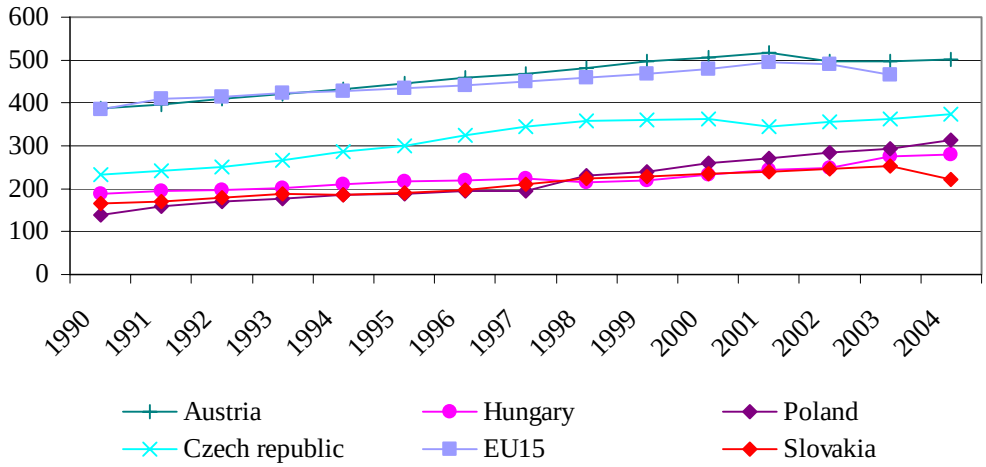
Source: SO SR

Rail transport equipment (pcs)

Total number of vehicles	1996	1999	2000	2001	2002	2003	2004	2005	2006
Locomotive	1 296	1 253	1 208	1 167	1 131	1 116	1 072	1 079	1 087
Diesel railcars	373	383	361	344	320	315	279	281	251
Wagons	35 898	29 710	26 975	24 587	24 796	23 973	24 936	25 515	25 989
Passenger railway vehicles	2 096	1 703	1 642	1 561	1 873	1 597	1 524	1 286	1 311
Combined transport	-	349	457	452	449	227	449	257	257
Total	**39 663**	**33 398**	**30 643**	**28 111**	**28 569**	**22 522**	**27 811**	**28 161**	**28 895**

Source: SO SR

Number of passenger cars per 1 000 inhabitants– international comparison



Source: EUROSTAT

- **Transport infrastructure**

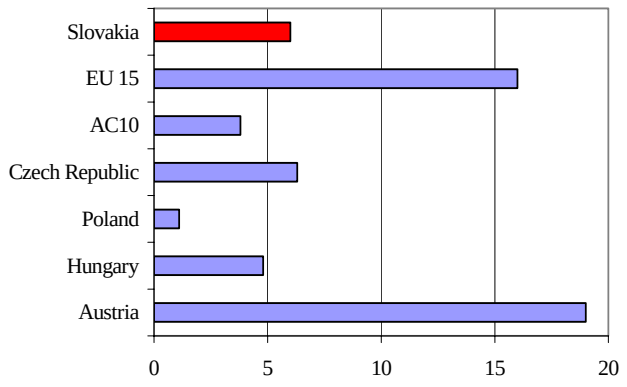
In 2006, the SR transport network included 17 828 km of roads and motorways. Highways represented 328 km of the network. The length of railways was 3 665 km, with 1 557 km of electrified tracks. The length of navigable watercourses remained unchanged at 172 km, with channel length of 38.45 km.

Basic data on the transport infrastructure (km)

Indicators	1993	1996	1999	2000	2001	2002	2003	2004	2005	2006
Length of roads and motorways	17 865	17 867	17 734	17 737	17 736	17 750	17 772	17 780	17 803	17 828
of which motorways	198	215	295	296	296	302	313	316	328	328
Length of railways	3 661	3 673	3 665	3 662	3 662	3 657	3 657	3 660	3 658	3 658
of which electrified lines	1 415	1 516	1 535	1 536	1 536	1 556	1 558	1 556	1556	1 577
Length of navigate inland waterways and watercourses	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

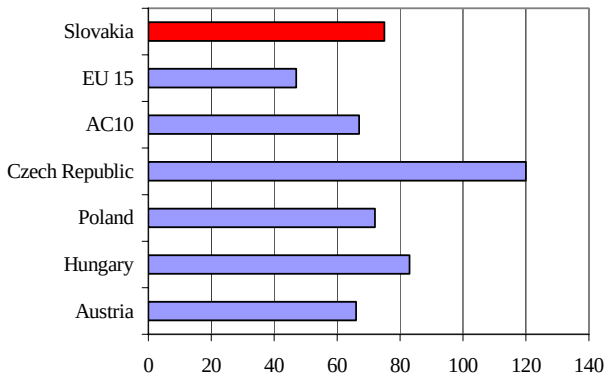
Source: SO SR

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 %).

- **Impact of transport on environment**

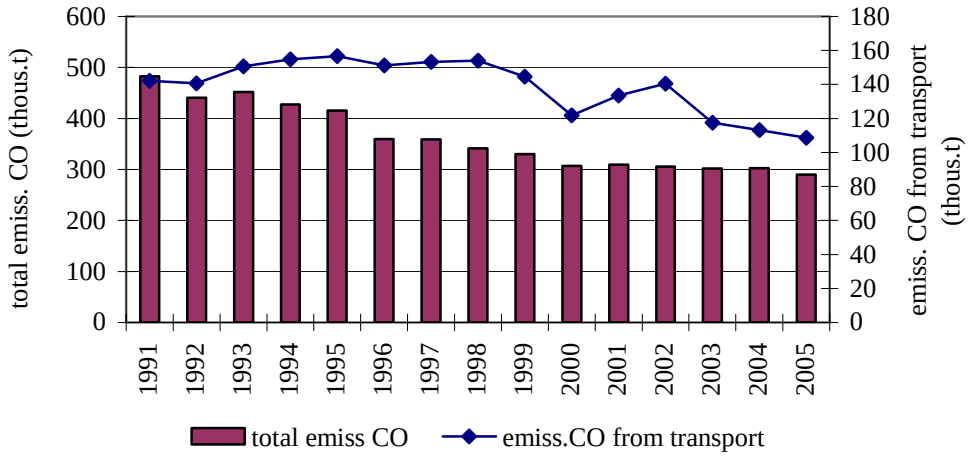
Over the recent years, important changes in the SR were introduced by a significant increase in the number of motor vehicles. Corresponding changes to the transport situation were dominant mainly in cities and residential zones, where there is an increased load on environment and public health.

- **Emissions from transport**

In terms of transport's share on total emissions of the assessed pollutants for 2005, significant is transport's share on CO emissions – 38 %, 43 % in case of NO_x and 24 % in case of NM VOC.

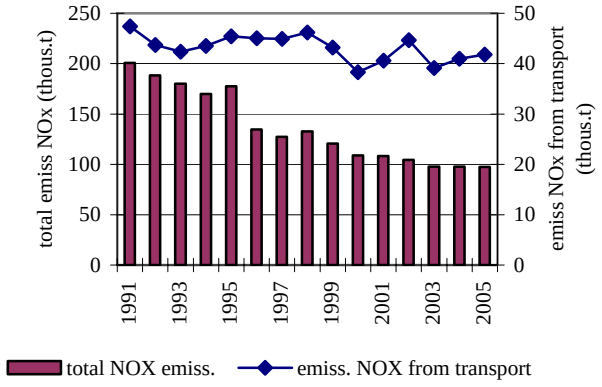
Solid pollutants represented 18 % of all emissions in 2004, while the SO_2 emissions showed 0.3 %. Transport's share on heavy metal emissions is approximately 3.2 %, with copper showing the greatest share on heavy metal emissions by transport (8.7 %) followed by zinc (3.1%), and lead (3 %). Similarly, in case of other heavy metals there was a slight increase in the values of the recorded emissions, compared to the previous year.

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



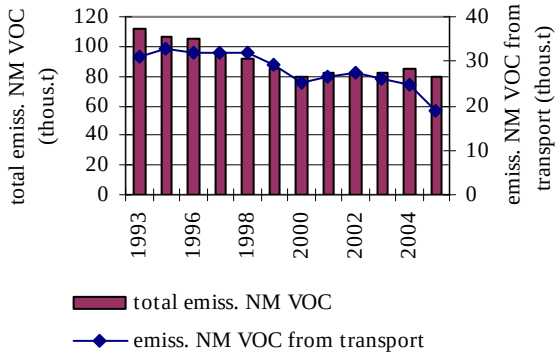
Source: SHMI

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



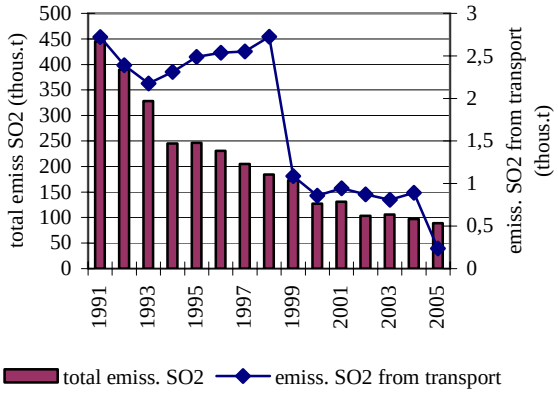
Source: SHMI

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



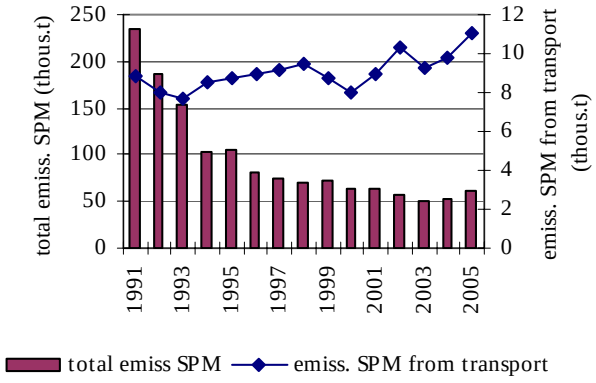
Source: SHMI

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

- **Waste from transport**

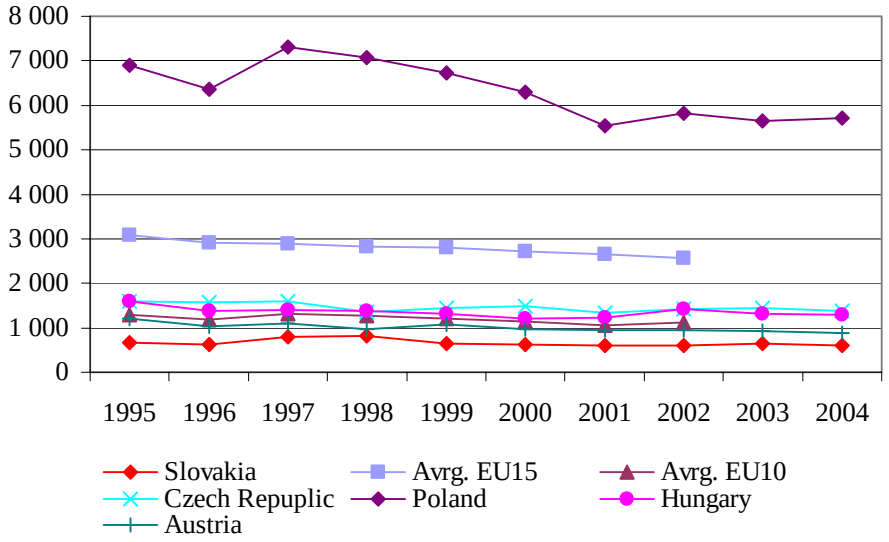
In 2006, there was 2 407 595.21 tonnes of waste generated in the area of transportation. This included 64 193.80 tons of hazardous waste, and 2 343 401.41 tons of other waste. Increase in 2006 was caused by recording about 2 273 000 tons of excavated soil from ground works when building the Sitina tunnels in Bratislava.

- **Traffic accident rate**

In 2006, there is a slight increase in the number of traffic accidents, compared to the previous year.

However, over the monitored period of 1993-2006, 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 2006, **percentage of agriculture on gross domestic product** was **4.4 %.** Involvement of agriculture in all indicators of the national economy decreased, compared to 2005.

♦ Structure of agricultural land

In 2006, **total area of agricultural land** in the SR was 2 430 683 ha. **Loss** of agricultural land including the arable land transfer to forestland, non-agricultural and non-forested land in 2006 was **2 574 ha.** Loss in agricultural land was mostly the result of construction activity (1 380 ha), including the civil and household construction (548 ha), 546 ha of agricultural land was forested. In 2006, there was a reduction in the size of arable soil, permanent grasslands, fruit orchards, gardens and hopp-fields. Only vineyards showed a slight increase.

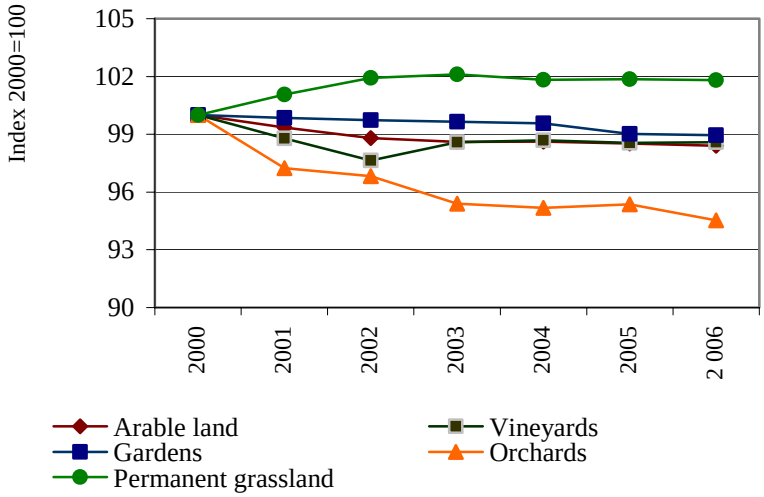
Structure of the agricultural land (state to the date 31st December 2006)

Type of land	Area(ha)	Share of agricultural land (%)
Agricultural land total	2 430 683	100.00
Arable land	1 427 357	58.73
Hop-fields	534	0.02
Vineyards	27 314	1.12
Gardens	76 813	3.16
Orchards	17 792	0.73
Permanent grassland	880 873	36.24
Total area of SR	4 903 397	-

Source: IGCC SR

Size of arable land per one inhabitant in 2006 was **0.27 ha.**

Agricultural land fund structure after the year 2000

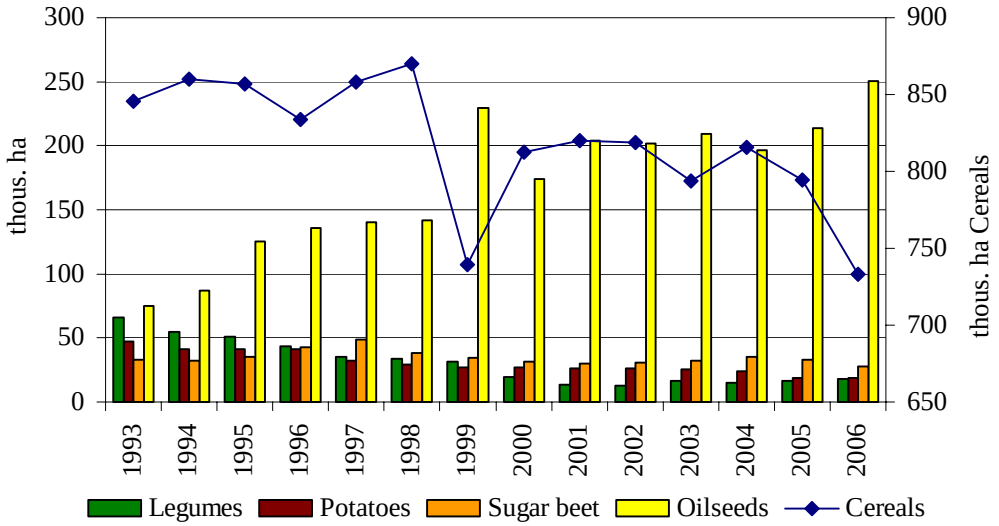


Source: IGCC SR

Plant production

In 2006, **harvest areas in most agricultural crops decreased,** with the exception of oilseeds and legumes. Oilseeds included mostly growing cultures of rape seed and sunflower, as they are used in the production of metylester.

Harvested areas of agricultural crops



Source: SO SR

Compared to 2005, **genetic diversity** (representated varieties of agricultural crop cultivated in the SR) in 2006 shows **an increase** in all mentioned crop categories, with the exception of forage beet.

Number of agriculture plant's varieties in the SR

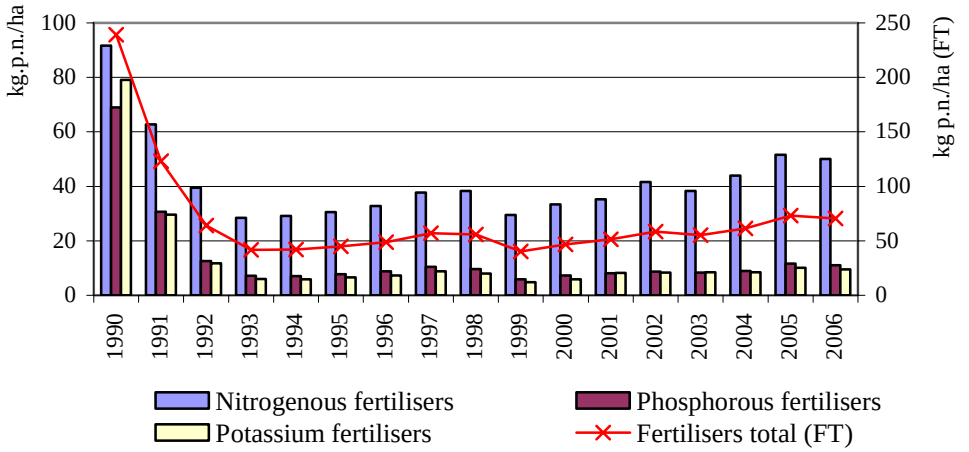
Agricultural plant	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
Winter wheat	22	23	22	23	24	25	28	28	34	37	41	45	57	65
Winter barley	10	10	11	8	9	10	11	11	13	14	11	14	14	20
Spring barley	26	25	26	27	24	22	23	24	21	24	28	29	30	36
Potatoes	44	48	60	72	70	67	69	75	78	81	90	103	101	109
Rapeseed	7	10	14	12	12	9	14	16	19	22	25	32	29	35
Sugar beet	28	37	40	52	58	61	63	52	53	42	42	38	41	47
Fodder beet	12	16	16	13	12	6	8	8	8	8	7	6	6	6

Source: RIPP

Fertiliser consumption

In 2006, consumption of **fertilisers** increased from the previous year and reached the level of 70.6 kg of pure nutrients per hectare of agricultural land.

Fertilisers consumption in Slovakia (kg pure nutrient/ha)

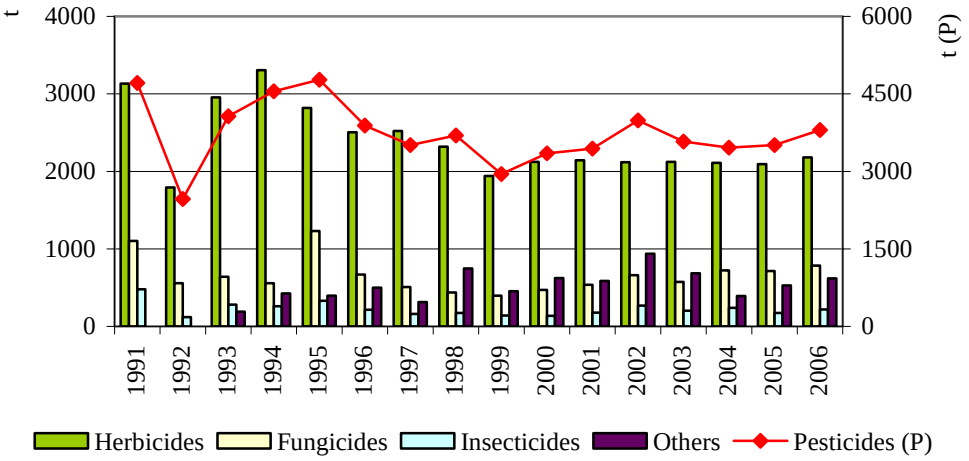


Source: CCTIA

Pesticides consumption

Compared to 2005, total consumption of pesticides in 2006 increased by 8.3 %. Altogether, 3 804 t of pesticides were applied, including 2 178 t of herbicides, 785 t of fungicides, 220 t of insecticides, and 621 t of other pesticides.

Pesticides consumption in Slovakia (t)

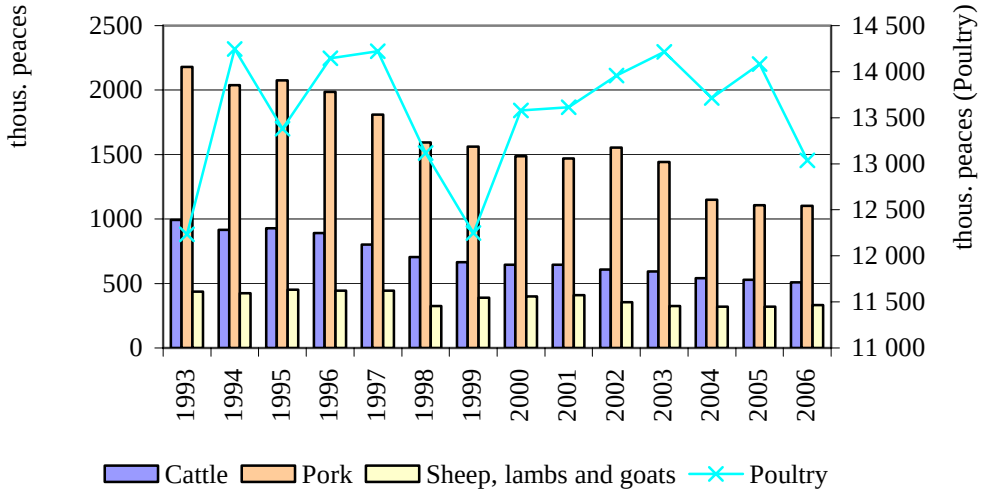


Source: CCTIA

Animal production

In 2006, numbers of major livestock categories again dropped, i.e. cattle, pork, poultry, with the exception of the sheep, lambs and goats, which showed a positive growth in numbers.

Number of livestock in Slovakia (thousand peaces)



Source: SO SR, MoA SR

Genetic diversity expressed by number of livestock in the SR decreased from the previous year in cases of cattle, pork and goats.

Number of livestock breed in the SR

Breed	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
Cattle	5	5	5	5	6	6	11	11	11	11	11	11	12	11
Pork	15	15	15	15	15	15	16	15	13	11	11	11	11	8
Sheep	8	9	10	9	9	12	12	13	12	12	13	13	13	13
Goats	2	2	2	2	2	2	2	2	2	2	2	2	3	2

Source: RIAP

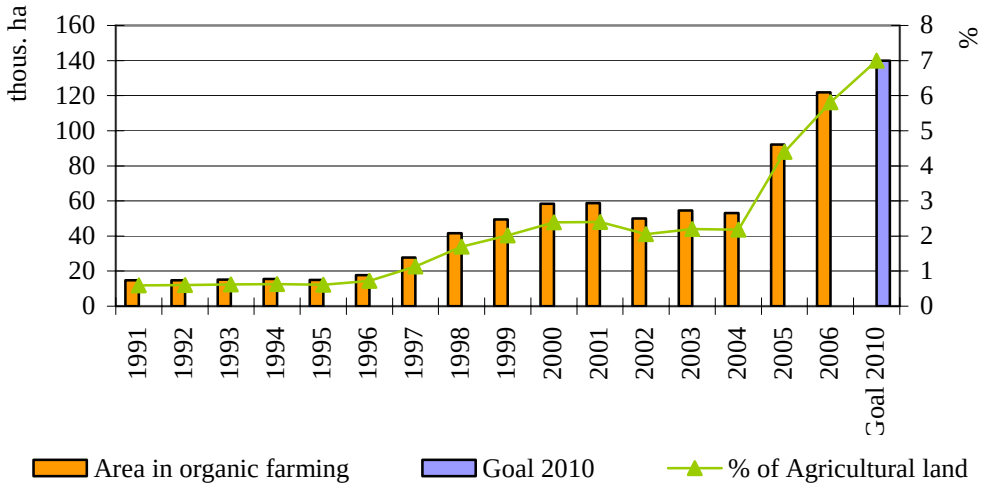
Melioration

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 2006, there was 25 325 ha of irrigated agricultural land.

Organic farming

In 2006, the system of organic farming in the SR included 298 subjects farming on 121 956 ha of agricultural land, which is 5.81 % 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

In 2006, in total, there were 118 756 number of livestock **raised** in organic farming. More than 390 colonies of bees were included into the system of ecological farming.

Number of livestock in organic farming in Slovakia (pieces)

Livestock category	2005	2006
Cattle	20 133	28 922
Sheep	57 830	87 607
Pork	206	312
Poultry	76	58
Livestock total	79 519 + 390 colonies of bees	118 756 + 390 colonies of bees

Source: CCTIA

Agriculture demands in exploitation of resources

Since 2002, there has been a continuing **growth in the consumption of liquid fuels.** On the other hand, solid fuel consumption decreased. Just like in 2003, there is a falling trend in the consumption of gas fuels, heat, and electricity.

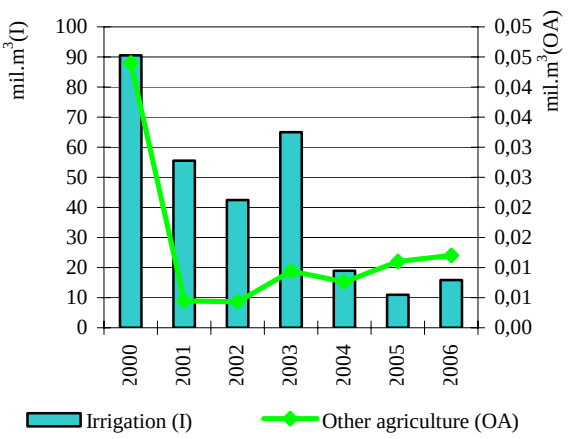
Consumption of selected fuel types, heat, and electricity in agriculture (TJ)

Kind of fuel	2002	2003	2004	2005
Solid fuel	133	131	82	65
Liquid fuel	2 665	2 987	3 250	3 417
Gas fuel	1 869	3 261	1 781	1 670
Heat	270	300	181	179
Electricity	1 850	3 294	1 530	1 411

Source: SO SR

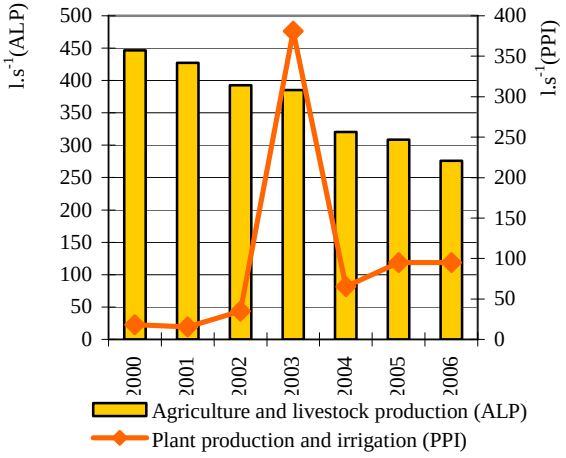
Compared to 2005, in 2006, there was an increase in surface water volumes used in agriculture for irrigation purposes. On the other hand, volumes of groundwater used in agriculture for livestock production, plant production and irrigation purposes slightly decreased.

Trend in surface water use in agriculture



Source: SHMI

Trend in groundwater 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. Technological equipment is lacking in the area of implementation. In 2006, there were 4 biogas production facilities in operation in Slovakia. Biogas was produced from cattle manure at the volume of the 809 thous.m^3. It is possible to expect the annual production of biogas from cattle excrements at the 241 mil.m^3, and from pork excrements at the 36 mil.m^3. Energy equivalent is 1.95 TWh or 6.9 PJ of heat.

Total annual production of agricultural biomass suitable for heat production in Slovakia

Crop type	Area (ha)		Yield of biomass (t/ha)		Production of biomass (t/year)	
	2005	2006	2005	2006	2005	2006
Thick-sown cereals - total	620 529.68	565 665.38	3.55	3.27	811 152.10	739 890.30
Maize	154 085.67	151 005.65	9.76	7.77	1 503 876.00	1 173 308.80
Sunflower	91 146.09	108 816.00	4.71	4.62	429 297.70	502 729.90
Rapeseed	106 204.00	122 511.38	4.42	4.24	469 421.70	519 446.60
Orchards	7 870.14	7 684.29	3.50	3.50	27 545.00	26 894.00
Vineyards	16 771.70	16 262.09	1.50	1.50	25 156.50	24 393.00
Flight from permanent grasslands	80 000.00	82 000.00	2.00	2.00	160 000.00	164 000.00
Total	1 076 607.28	1 053 944.79	-	-	3 426 449.00	3 150 662.60

Source: SCAR-RIPP

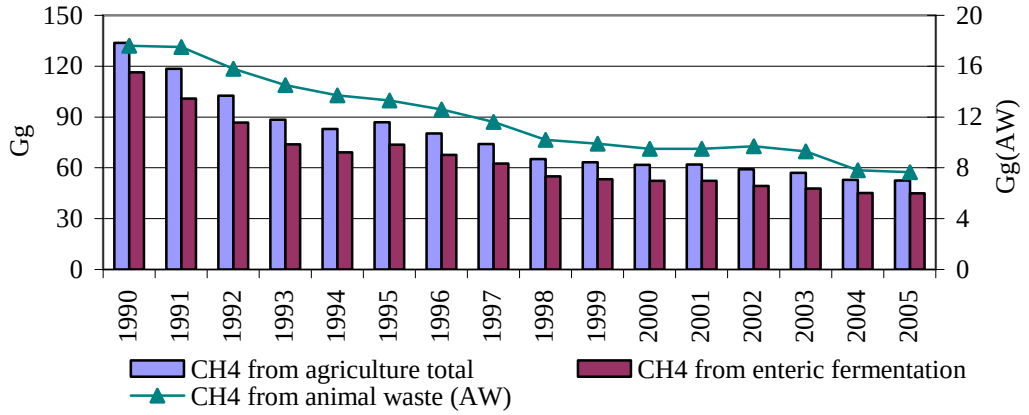
Impact of agriculture on environment

Agriculture is one the important environmental polluters. It mostly contributes to green house gases emissions, production of waste, discharge of waste water, and other.

Impact of agriculture on air and global climate

Share of agriculture on total methane production is systematically falling, due to decreased number of livestock. In 2005, agriculture produced 52.6 thous. tons of methane.

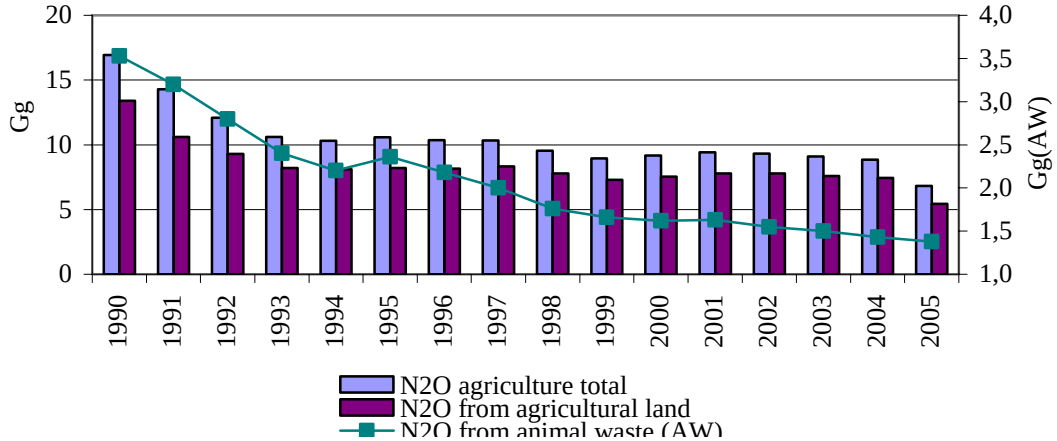
Trend in methane emissions from agriculture according to type of activity



Source SHMI

Production of nitrous oxide from agriculture is rapidly decreasing, due to a significant reduction in the use of fertilisers. In 2005, agriculture produced 6.8 thous. tons of nitrogen monoxide.

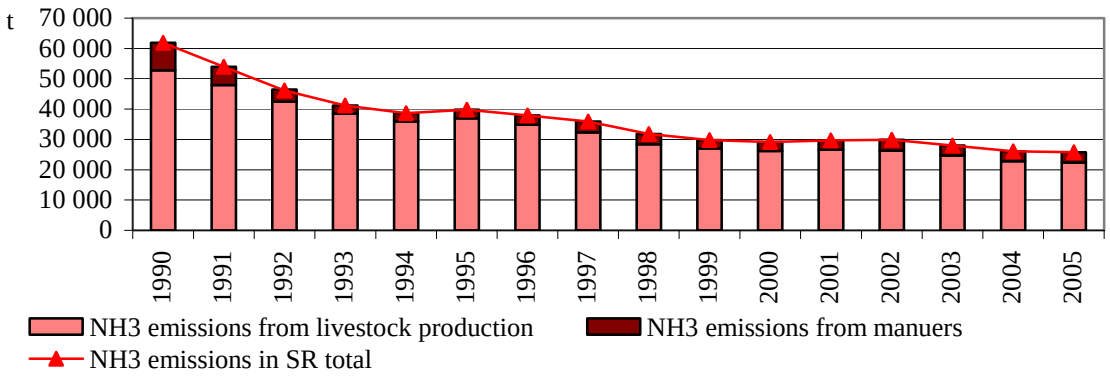
Trend in nitrogen monoxide emissions from agriculture according to type of activity



Source SHMI

Agriculture is the biggest producer of ammonia (NH_3). NH_3 emissions showed a falling tendency since 1990. Reduction in emissions from livestock production relates to a decreased rate of livestock raising.

Trend in ammonia emissions from agriculture



Source: SHMI

Impact of agriculture on water quality and quantity

In 2006, there was 470 386 m^3 of discharged wastewater related with agricultural activities.

Discharged amount of waste water in SR related to agriculture in 2006

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	110 286	7.303618	5.012538	22.47771	0.00675
Untreated	360 100	3.4762	4.0256	3.3497	0.22343
Total	470 386	10.77982	9.038138	25.82741	0.23018

Source: SHMI

Production of waste in agriculture

In 2006, there were 741 444.24 tons of total waste produced in agriculture, which is 80 376 tons more that in 2005. Of total produced waste other waste was 715 496.86 tons, which is 69 603.46 tons more than in 2005. Produced hazardous waste in 2006 was 25 947.38 tons of total waste volumes, which is 10 772.54 tons more than in 2005.

Forestry

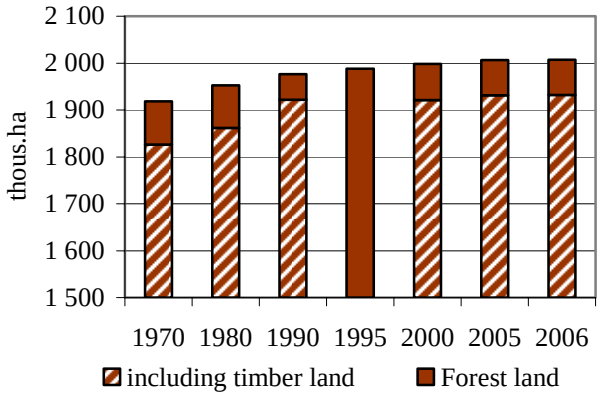
♦ **Share of forestry on GDP production**

GDP of forestry in 2006 was still influenced by the sale of left-over wood matter from the calamity of the Fall of 2004, reaching 8.5 bil. SKK, which is a 0.8 % share on the GDP generation (in fixed prices of 2000).

♦ **Structure of forest land**

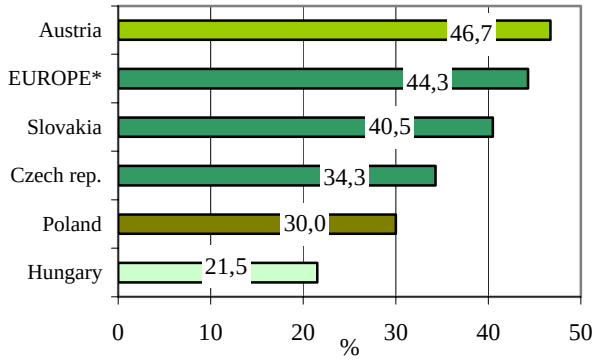
Slovak Republic belongs to the countries with the highest rate of **forestation. Forest land** in Slovakia in 2006 was about **41 %** (2 007 thous. ha) of total area of the state - there has been a long-term, continuous increase in their size. Timber land in 2006 represented app. 96.3 % (1 932 049 ha) of total size of forest land and similarly, there has been a gradual increase in its size. Calculated to the number of inhabitants, this represents **3.72 km^2 per 1 000 inhabitants.** Since 1950, size of forest land grew by 11.8 %, while the greatest increase in size was recorded between 1960-1970.

Trend in forest land and timber land



Source: NFC

Comparison of forestation in selected countries

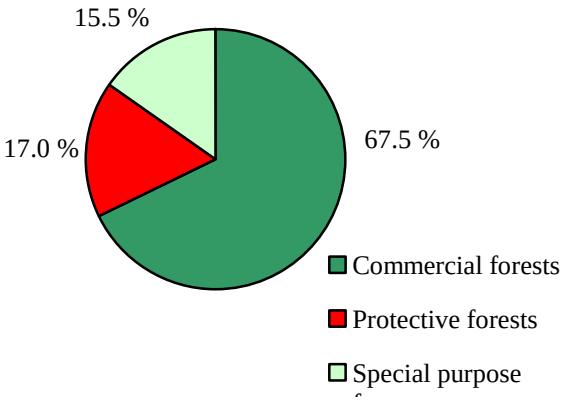


* – including Russian Federation;
Source: Global Forest Resources Assessment 2005

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 56.1 % of forests,** which is 15 % more than in the state ownership. Forest land with no fully identified or documented ownership claims, or with no claims yet received from the entitled persons, take up **5.5 %** 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 2006



Source: NFC

Overview of area according to function – protective forests (PF) and special purpose forests (SPF) (2006)

Function - PF	**% of PF**
Erosion control	75.1
Water management	22.2
Deflation control	1.0
Avalanche control	1.4
Bank protective	0.3
Function - SPF	**% of SPF**
Water protective	4.4
Recreational	9.7
Health resort-therapeutic	1.1
Nature protection	15.4
Air pollutants control	37.7
Game management	7.4
Education-research	24.2

Source: NFC

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

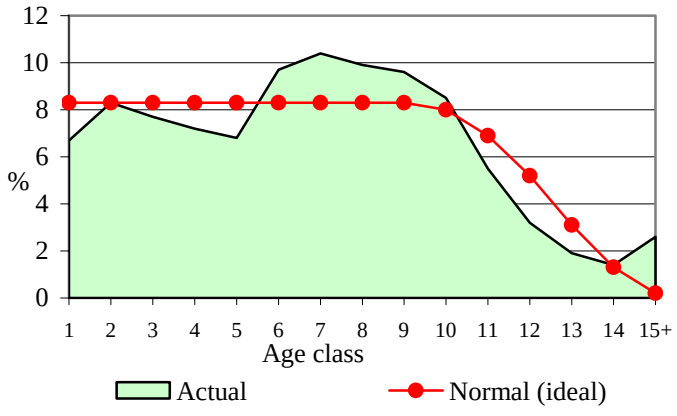
In terms of **forest composition by species**, there is a positive share of broad-leaved trees (59.2 %) compared to coniferous trees (40.8 %). There are **introduced tree types** commonly growing within broad-leaved tree vegetation areas. Their area has not increased over the recent decades (2.8 %), 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 (2006)**
Spurce / Fir	4.9 / 14.1	18.2 / 6.7	26.1 / 4.0
Pine / Larch	0.7 / 0.1	4.2 / 6.7	7.2 / 2.4
Other coniferous	0.9	1.2	1.1
Coniferous together	**20.7**	**37.0**	**40.8**
Oak	19.9	17.7	13.4
Beech / Hornbeam	48.0 / 2.6	35.9 / 0.9	31.2 / 5.7
Maple /Ash	3.2 / 0.4	3.0 / 0.5	2.0 / 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	0.7
Broadleaved together	**79.3**	**63.0**	**59.2**

Source: NFC

Age composition of the forest in 2006



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 2006 was **37 102 km**.

♦ Forestation and standing volume

In 2006, **15 561 ha were forested**, including 6 305 ha forested through **natural regeneration.** Share of natural regeneration has almost doubled since 1990 (currently, it represents 40.5 % of total forestation) and helps to enforce sustainable development practices in forests.

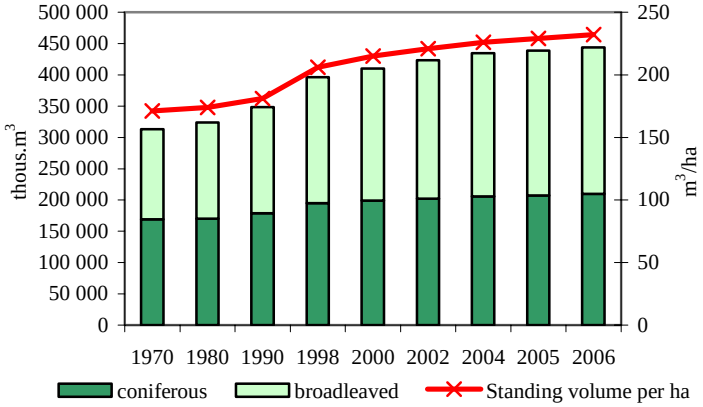
Standing volume in 2006 reached **443.8 mil. m^3** of barkless wood matter, with average stock per hectare reaching 232 m^3. Still increasing volume of wood stock is mainly influenced by the existing age composition of the Slovak forests, with abnormally high share of most-incremental medium age levels. **Total current increment** decreased since 1990 (through changes to the age composition) and is 11 671 thous. m^3. This trend may be considered linear since 2000.

Total standing volume in 2005-2006

Indicator	2005	2006
Standing volume together (thous. m^3 d_{bh}>7 cm under bark)	438 905	443 780
Of that: Coniferous	207 354	209 799
Broadleaved	231 551	233 981
Standing volume per ha (m^3)	229	232

Source: MoA SR

Trends in total standing volume



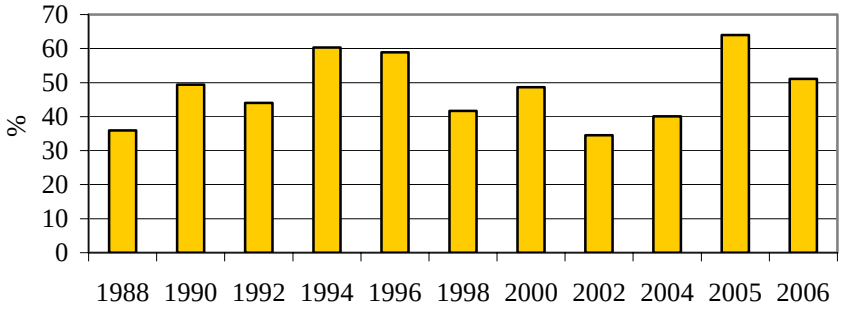
Source: NFC

♦ Timber felling

Timber felling in the Slovak forests shows an increasing tendency over a long range. In 2006, it was **8 357 thous. m^3**, including 5 150 thous. m^3 of coniferous timber. Since 1990, it has grown by 58.4 %. **Incidental felling** included **51.1 %** of total anticipated harvested timber (including 74.4 % of harvested coniferous trees), which significantly contributed to exceeding the anticipated harvested volumes by almost 19 %.

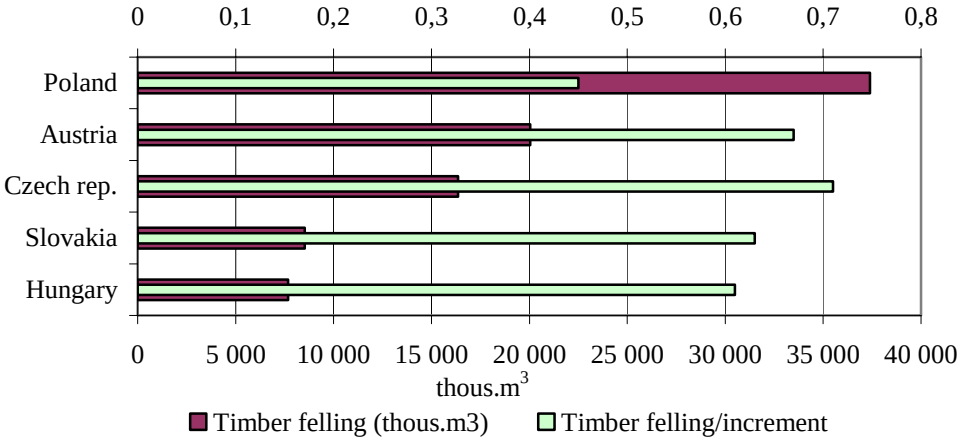
Natural conditions in the SR forests allow implementing the shelter wood system on about 70 % of timber land, selection harvest on about 10 %, and clear cutting on the remaining 30 % of timber land. **Intensity of forest resources utilisation** was as much as 71.6 % this year; however, it still points 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

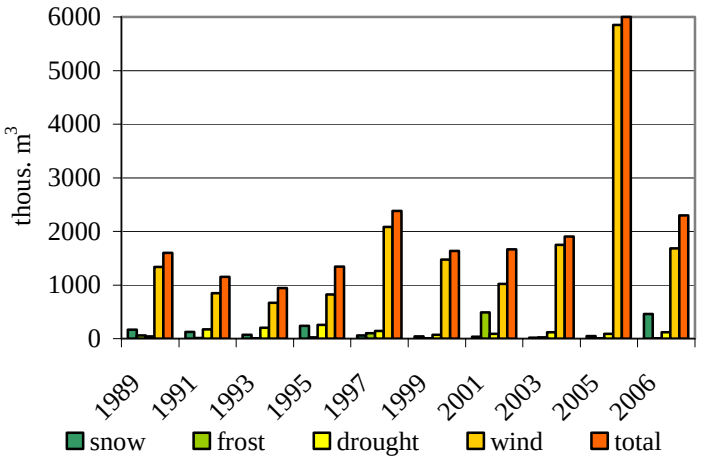


Source: UNECE/FAO (2000) and actualisation

♦ **Injurious agents and forests condition**

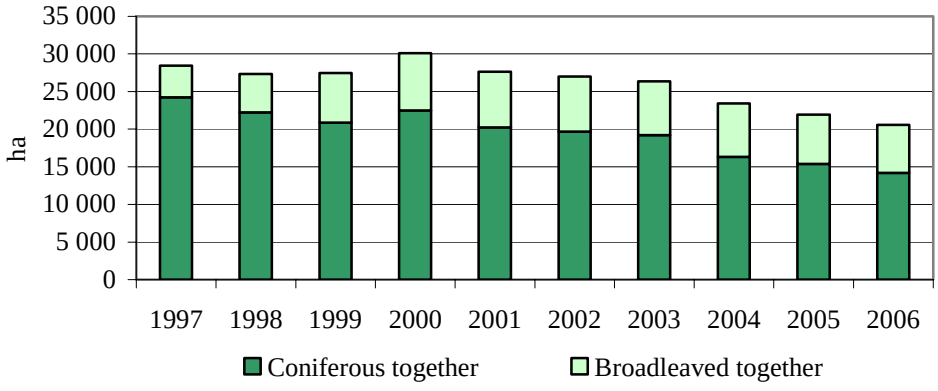
As a consequence of negative impacts of wind, snow, frost, drought, and unknown **abiotic factors,** there was **2 295.6 thous. m^3** of wood matter **processed** this year, with almost 73 % caused by the wind.

Trend in damages caused by abiotic agents



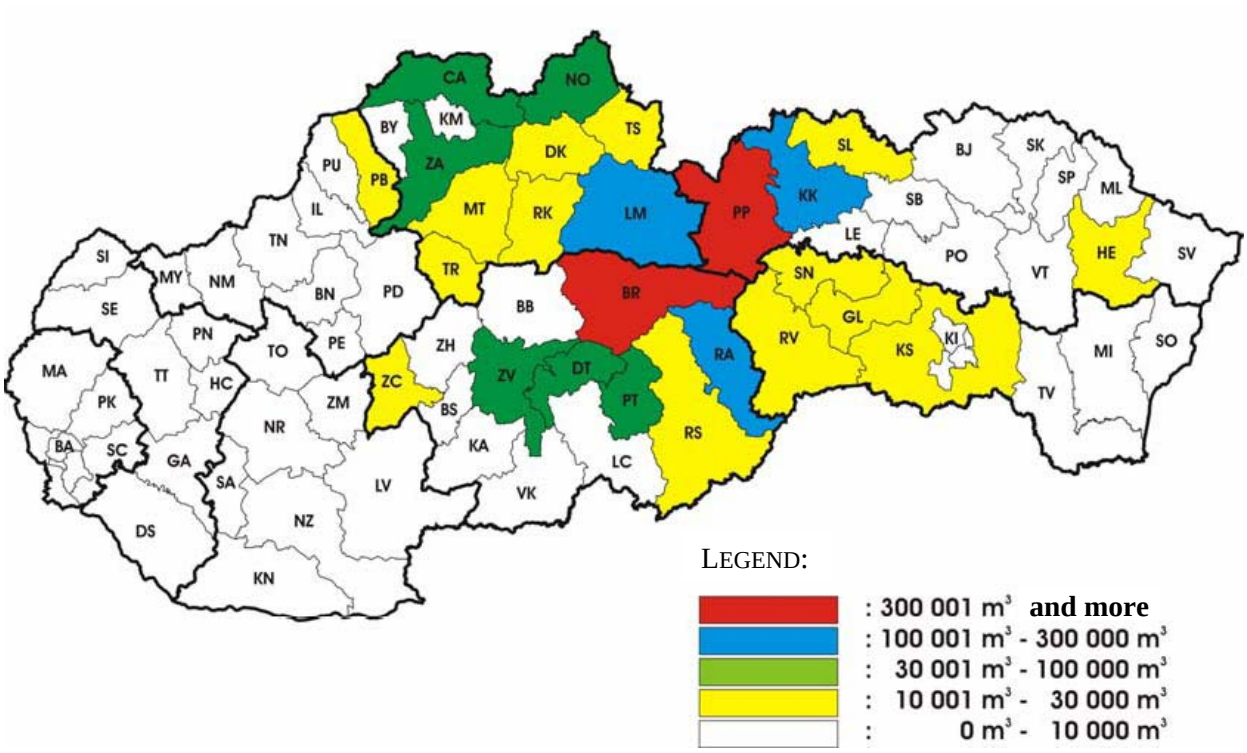
Source: NFC

Trend of the air pollution forest damage



Source: SO SR

Forest damage by wind and by SR districts in 2006



Source: NFC

Damage by air pollution was recorded on **20 565 ha** of forest land (including 52.6 % on spurce and 23.4 % on beech). Districts of Gelnica, Kežmarok, and Spišská Nová Ves show the most adverse situation.

In 2006, there were **237 forest fires** in Slovakia. In 55 % of cases, the cause behind fires was manipulation with open fire, arson (20 %), uncontrolled burning of waste (10 %), unknown cause (5 %), and other (5 %).

In 2006, the greatest invasion of vegetation by **bark beetles and woodworms** was recorded (as much as 1 344.2 thous. m^3) with 1 185 thous. m^3 processed. *Ips typographus* is the major harmful insect, attacking 1 183.5 thous. m^3 of wood matter. Most damaging of the **leave-eating and sucking insects** impacting the broad-leaf trees was *Lymantria dispar*, with its culmination point already passed. Significant reduction in its numbers is therefore anticipated. Numbers of *Dreyfusia*

nordmannianae sp. increased in 2006, with its regular occurrence on young fir trees in mountainous regions. Since the years 2000/2001, *Adelges laricis* and *Sacchiphantes viridis* on young larch trees and spruce trees represent a serious problem.

Armillaria ostoyae, 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.

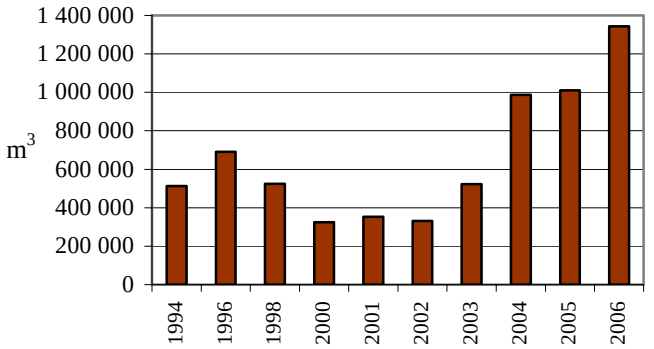
Total recorded damage caused by **game** was 9 160 thous. SKK. Since 1991, (24 501 thous. SKK) they have had a falling tendency, reaching their minimum in 1999 (6 262 thous. Sk) and beginning to grow again since 1999. Risks of forest vegetation damaged by game are increasing.

The volume of damages caused by biotic injurious agents in 2006

Phytopathogenic microorganisms	299 022 m^3
Rots and tracheomycosis	45 972 m^3
Leaf-eating and sucking insects	9 441 ha
Bark beetles a wood borers	1 185 100 m^3
Game	891 ha

Source: NFC

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 2006. 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.

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 1987-2006

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
1996	Coniferous	12	47	37	2	2	88	41	4
	Broadleaves	15	57	26	1	1	85	28	2
	Total	13	53	30	2	2	87	34	4
1998	Coniferous	16	44	36	4	0	84	40	4

	Broadleaves	27	46	25	2	0	73	27	2
	Total	22	46	29	3	0	78	32	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
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
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
2006	Coniferous	5	53	41	1	0	95	42	1
	Broadleaves	21	62	16	1	0	79	17	1
	Total	14	58	27	1	0	86	28	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

Major knowledges reached in 2006:

- Of total number of 3 975 monitored trees in 2006, 28.1 % were damaged, i.e. with defoliation exceeding 25 % (degrees of defoliation 2-4).
- A worse situation exists with the coniferous trees, with 42.4 % of damage trees, while only 17 % of the broad-leaf trees are damaged.
- Average defoliation of all tree types together in 2006 is 23.1 %, including 27.4 % of coniferous, and 19.7 % of broad-leaf.
- In 2006, health condition of broad-leaf trees worsened, compared to 2005.
- Health condition of coniferous trees has been **stabilised** since 1996, 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-defoliated tree types are hornbeam and beech. In long term, tree types with the greatest level of defoliation are fir and spruce.
- Compared to 2005, in 2006, improved health condition measured by defoliation was observed only in oak. Fir, hornbeam and ash showed the most significant increase in average defoliation.
- Orava, Kysuce, and Spiš-Tatras area belong to the areas with the worst long-term health condition of forest, partially also the Acacia vegetation of the south of Slovakia.
- As much as 85.5 % of the monitored trees showed at least one sign of damage by harmful agents. Only 10.3 % of trees showed no signs of damage. Most frequent sites of damage included the root bases and trunks, with as much as 69 % of trees damaged, especially mechanically damaged trees due to harvesting activities.

Monitoring of forests and environmental interactions – intensive monitoring of forests (for the year 2005):

- Compared to 2001, sulphur deposition in the SR forests in 2005 dropped by 40-50 % on average.
- All monitored forests since 1999 have shown a significant decrease in sulphate anion concentration in rainfalls, with a subsequent slight increase in the pH value.
- Total nitrogen deposition was higher than sulphur deposition at all monitored areas, both in open area, as well as in forestland. The trend started last year only proves that the acidification and eutrophication impacts of nitrogen gradually play a key role in relation to the health condition of forest vegetation.
- Ozone concentrations in the monirored territories in 2005 showed a typical annual trend, while the critical AOT 40 index level (set at 10 000 ppb.h for forest ecosystems) was exceeded in all monitored territories. The mentioned value was regularly exceeded in higher altitudes as early as in the first half of the vegetation season.

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 **1 818 hunting areas** in Slovakia in 2006, including 30 game protection territories and 12 pheasant territories. Total size of the hunting territory is **4 414 407 ha**. There is 2 314 thous. ha of agricultural land, 1 972 thous. ha of forest land, 53 thous. ha of aquatic, and 75 thous. ha of other land. Number of hunting areas is increasing, while their average size is decreasing.

Spring stock of the cloven-hoofed game excluding the fallow dear game as of March 31, 2006 were higher than in the previous year.

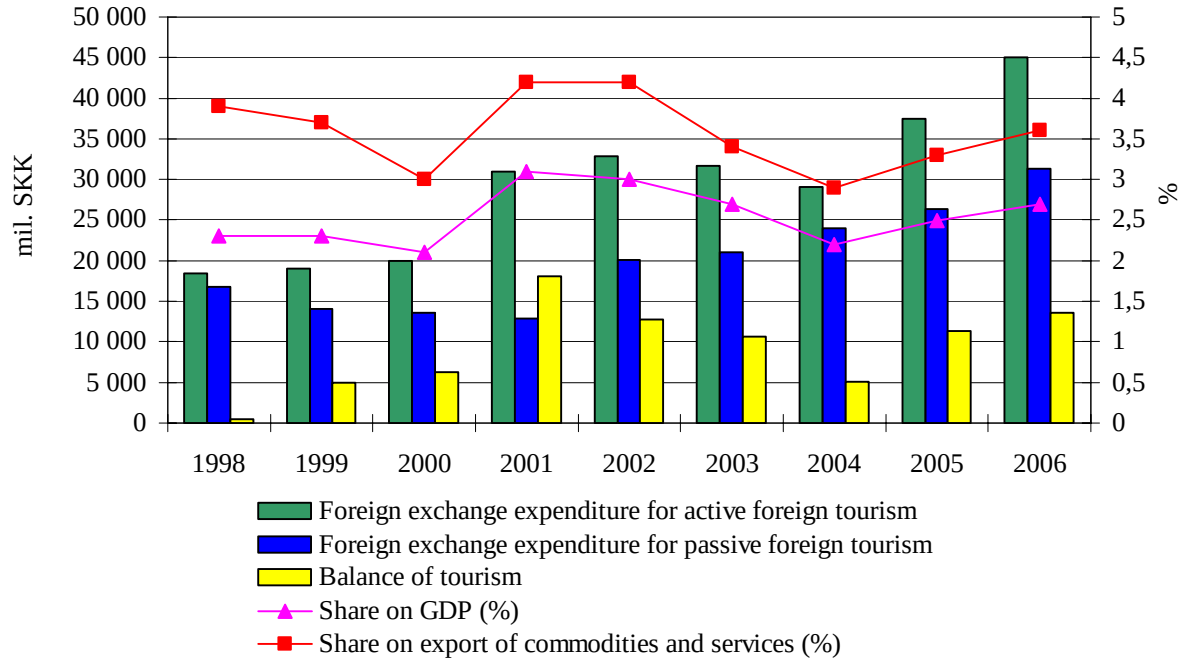
Shooting of **deer** in 2006 was higher than in the previous year; however, the planned shooting quota was not reached. Shooting of fallow **deer, mouflon and boar game** decreased. Spring stock of pheasant and brown hare increased. On the other hand, spring stock of small game dropped. In terms of other **rare species** of animals, compared to the previous year, their numbers increased, excluding wild goose. Hunting of rare game species is strictly regulated. Permitted shooting limit of **bear** was 63, while the actual number of shot animals was 16. 91 wolves and 8 alpine chamois were shot. A significantly higher number of chamois (665) was recorded than in the previous year (625).

Recreation and tourism

♦ Tourism and its contribution to the GDP

Notwithstanding their fluctuating characteristics, **foreign exchange revenues for active tourism balance in 1997-2002 were on the rise**; however, during the period of 2002-2004, there was a **reduction,** caused by major changes outside the sector (strengthening of the Slovak currency conversion rate, especially relating to the US dollar and Polish zloty, increased original VAT tax rate from 14 to 19 %). **There was again a very significant increase in revenues from tourism and their share on the GDP and export of goods and services in 2005-2006.**

Tourism and its share on GDP and export between 1998-2006



Source: SO SR

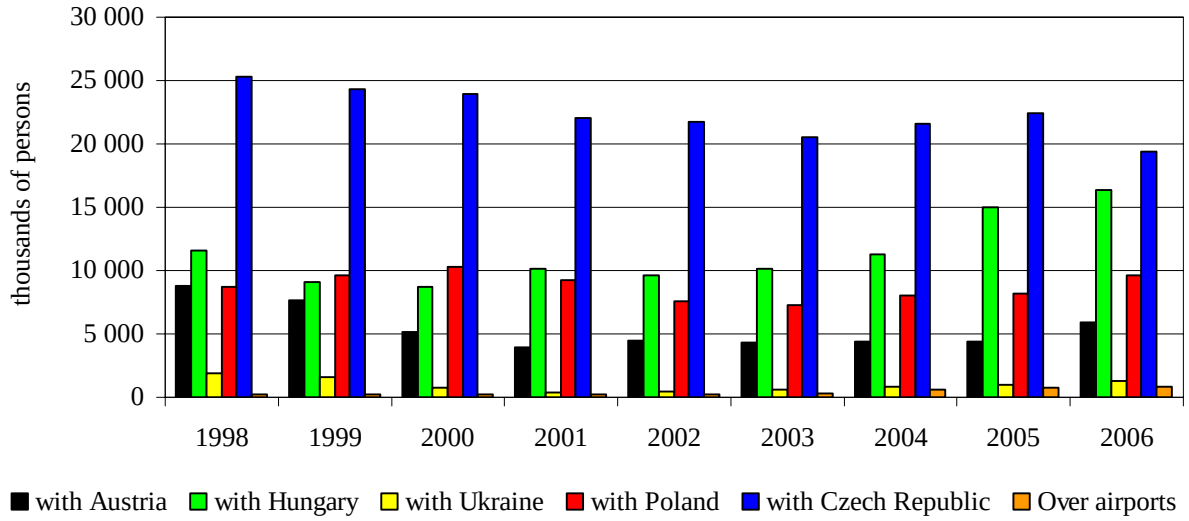
* - level of revenues in foreign exchange in 2001 is partially affected by transition to EUR toward the end of the year and the SR citizens placing foreign exchange on their foreign exchange accounts

♦ Specific analysis of recreation and tourism

In 2006, no selection statistical survey was implemented in the area of active international tourism, neither was there any survey on leisure activities of the Slovak inhabitants. For this reason it is not possible to provide any information on motivational factors of international visitors to Slovakia for the year 2006.

Overall number of visits of international tourists and the number of visits made by the Slovaks in the period of 1997-2003, despite a significant fluctuation, **was falling. The trend was turned over in 2004, with a very mild, continuing growth also in the period of 2005-2006.** The most heavily loaded territory is the national border of Slovakia and the Czech Republic. On the other hand, the least loaded is the Slovak-Ukranian national border, despite a recorded significant growth in 2001-2006.

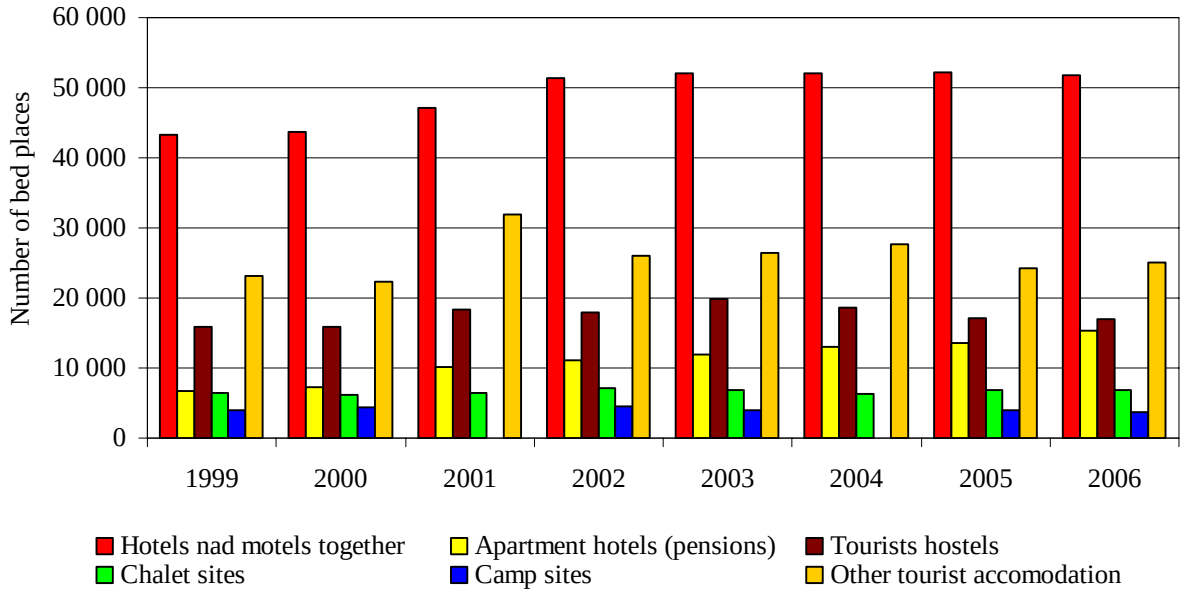
Foreign tourism by loaded territories of national borders (%) between 1998-2006



Source: SO 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 2004-2006,** 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 1999-2006

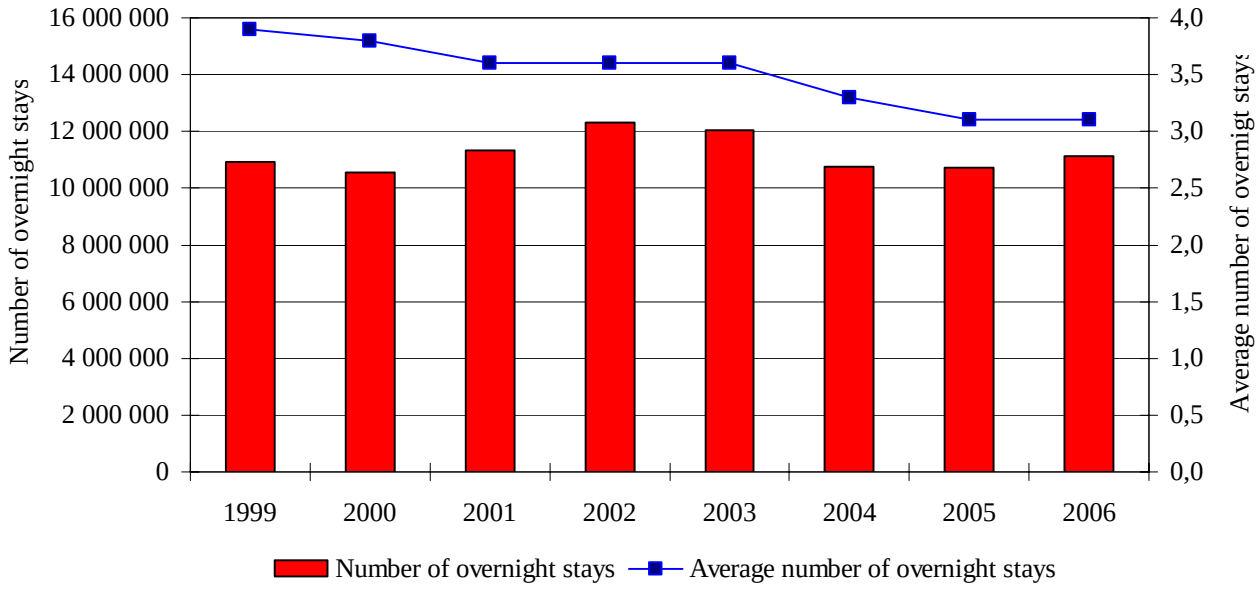


Source: SO SR

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 1999-2006



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**

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 2001-2006

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
2006	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)
2006	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 hiking paths	35/0,15	157/0.69
2006	5	-	4	2	15 + 157 km of marked hiking paths	35/0,15	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
2006	-	-	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
2006	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
2006	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
2006	-	-	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
2006	1	-	5	-	-	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	300/0,74	103/0.26	300/0.74
2006	8	1	6	3	302/0,75	103/0,26	302/0,75
♦ **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**	**1 234,5**	**2 929 km**
2006	**26 + The Tatranský National Park**	**13**	**33**	**27**	**682 + suitable marked hiking paths**	**1 244,5**	**2 931 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 Velká Fatra were declared 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**.

Soil erosion on documented tourist hiking trails and cyclotrails in the territories of national parks between 2001-2006

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
2006	15/1,4	883/30,1

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

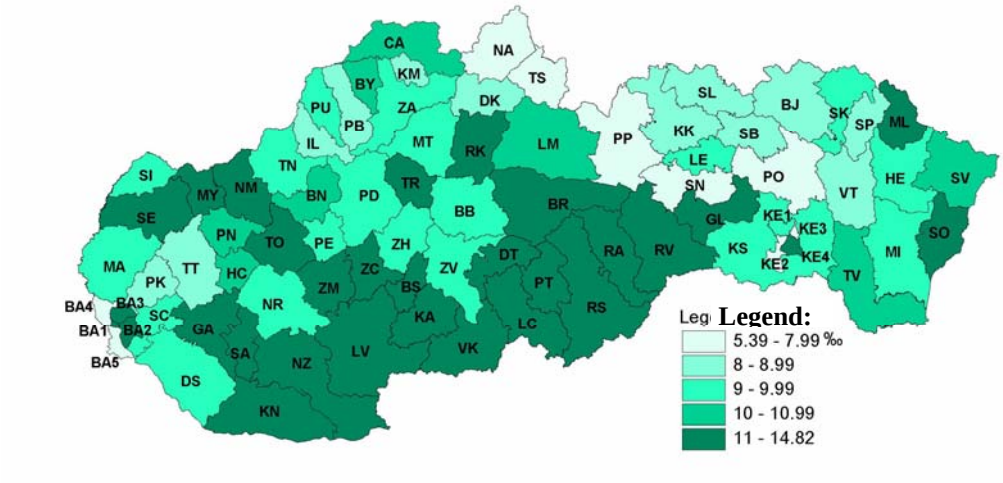
Life expectancy at birth

Average life expectancy at birth is rising for both genders, reaching 70.4 years for men and 78.2 years for women in 2006. Compared to 2005, average age of the living Slovak population increased and reached the level of 36.1 years in men, and 39.3 years in women. Despite this positive trend, Slovakia belongs to the 5 EU countries (Baltic States, Hungary, Slovakia) with the lowest average life expectancy for both men and women.

Morbidity and mortality

In 2006, there were 28 091 deaths for men and 25 210 deaths for women. Compared to 2005, this is lower by 60 deaths in men, and 114 deaths in women.

Number of dead in 1 000 inhabitants according to districts in 2006



Source: SO SR

Greatest public mortality both in men and women over a long time period has been from **circulatory system diseases**, with 29 297 deaths, which is 48.2 % in men and 62.5 % in women. Second most frequent cause of death for both, men and women, are still **neoplasms.** Compared to the last year, cancer shows a slightly decreasing tendency, with 11 732 deaths in 2006, which is 24.3 % of men and 19.5 % of women. In men, third most frequent cause of death is **injuries and poisonings** (8.7 %). In women, the third most frequent cause of death includes **respiratory diseases** with a slight reuction, compared with the last year (5.1 %).

Public Health – selected indicators

Indicator	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
Life expectancy at birth										
• Men	68.9	68.6	68.95	69.15	69.51	69.77	69.76	70.29	70.1	70.4
• Women	76.7	76.8	77.03	77.23	77.54	77.57	77.62	77.82	77.9	78.2
Live births per 1 000 inhabitants	11.0	10.7	10.4	10.2	9.5	9.5	9.6	10.0	10.1	10.0
Deaths within 1 year of age per 1 000 live births	8.7	8.8	8.3	8.6	6.2	7.6	7.8	6.8	7.2	6.59
Infant mortality rates	5.4	5.4	5.1	5.4	4.1	4.7	4.5	3.9	4.1	3.53
Deaths	52 124	53 156	52 402	52 724	51 980	51 532	52 230	51 852	53 475	53 301
Deaths per 1 000 inhabitants	9.7	9.9	9.7	9.9	9.7	9.6	9.7	9.6	9.9	9.89

Source: SO SR

The Slovak Government in its Resolution No.10 of January 11, 2006, adopted the third revised Action plan for environment and public health for the SR (NEHAP III) with the objective to minimize the risks posed by environment, and maintain the environment in such a state that it does not damage the health of people, but ensures its positive trend. NEHAP III includes four priority areas:

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

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

In Febraury 2006, **Act 126/2006 Coll. on public health and amendments to other laws** was adopted. Provisions of the Act include among the responsibilites the implementation of the radiation situation and collection of data on the Slovak territory with the objective to assess the impact of radiation on public health. The implementing agency is the Public Health Authority of the Slovak Republic (PHA SR) in cooperation with the following ministries: Construction, Defense, Environment, Education, Agriculture, and Economy. PHA SR ensures and oversees activities of the central office for radiation and monitoring network, set forth in the SR Government Resolution no.347/2006 Coll.

♦ **Air dose equivalent rate**

Input of the external photon dose equivalent in air H ($nSv.h^{-1}$) in 2006 in the early alarm networks of in the whole SR territory reached the average value of 107.1 $nSv.h^{-1}$. Average annual effective dose E (μSv) for the whole SR territory was 937 μSv in 2006.

♦ **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 2006 reached average value 5 $\mu Bq.m^{-3}$.

In 2006, no major air contamination by man-made radionuclides was detected, ^{137}Cs radionuclide concentration in **radioactive fallout,** originating in the upper atmospheric layers as a result of nuclear weapons tests, was about 3.5 $Bq.m^{-2}$ in Slovakia.

♦ **Contamination of other environmental compounds**

Average soil contamination by the ^{137}Cs radionuclide in 2006 was about 2.8 $Bq.kg^{-1}$. Average activity of the ^{137}Cs radionuclide **in water** in 2006 was below 0.01 $mBq.l^{-1}$. Average tritium activity **in water** was at the level of 2.2 $Bq.l^{-1}$.

♦ **Contamination of foodstuff and agricultural products**

Of all man-made radionuclides, in 2006, 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 basic public health legislation on protection against the adverse effects of ionizing radiation is Act 126/2006 on **public health and amendments to other laws,** which superseded the former Act and Resolution.

Source of radiation	Radiation load	
	Person (mSv)	Population (10^5 manSv)
Natural background together. from that: - cosmic radiation - terestrial gama radiation - radio-nuclides in body - radon and the products of mutation	**2.94** 0.39 0.46 0.29 1.80	**650**
Medical exposure together. from that: - diagnostics - radiotherapy	 0.8 – 1.0 -	
Atmospheric testing of nuclear weapons	-	30
Radio-nuclides outlet	-	2

Source: PHA SR

Nuclear institutions

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. In 2006, 13 new executing resolutions were published, building on the atomic act. The

resolutions are fully in compliance with the EU legislation in the given area. Slovakia is a signatory to all major international agreements and conventions in the area of peaceful exploitation of nuclear energy.

In Slovakia, there are altogether 6 operated blocks of nuclear power plants (NPP) with nuclear reactors of the VVER-440 type.

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

- **Activity of nuclear institutions in SR**

NPP V-1 Bohunice

With both NPP – EBO V-1 blocks in operation in 2006, there were 11 occurrences, 8 of them within the INES 0 degree, and none in the INES 1 degree.

NPP V-2 Bohunice

In 2006, planned shutdowns were implemented at the NPP V-2 blocks for fuel-changing purposes together with overhauls, with the objective to carry out modernisation and ensure a better safety. The most critical role of the NPP V-2 modernization in the area of control and management systems is to replace and improve the original systems of block safety, as well as the automatic shutdown of reactors in order to introduce new, programmable computer systems. This year, both NPP V-2 blocks switched to a new nuclear fuel type.

In 2006, both NPP V-2 blocks detected 17 operation occurrences, 12 of them assessed under the INES 0 degree. This year, most attention was directed to launching of the 4th block, after a change in fuel.

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.

NPP Mochovce 1,2

In 2006, both blocks were subject to planned shutdowns due to overhauls and fuel changes. Meanwhile, investment projects were carried out with the objective to continually increase the nuclear safety, building on the experience from operating the blocks. Maintenance works were carried out at both blocks. The hermetic zone of the blocks was subject to maintenance, in order to ensure high tightness of spaces and prevent the leak of radioactive substances into the environment.

Number and type of occurrences in 2006 did not show any unusual technical malfunctions. In 2006, there were 24 occurrences in NPP Mochovce, 9 of which were classified under the INES 0 degree.

In terms of nuclear safety, systems and devices functioned reliably the whole year long.

Nuclear power plants under construction

NPP Mochovce 3,4 consists of two VVER 440 blocks with the V-213 type reactors with increased safety. Slovak Electric Power Plants, Ltd. is the owner of the power plant under construction. After the construction of both of its blocks ceased in 1994, the plant was conserved. Nowadays, there are undergoing conservation, protection, and evaluation works to assess the their usefulness for the **process of completion.**

Nuclear power plants to be phased out

The nuclear power plant A-1 of Jaslovské Bohunice that uses natural uranium and a heavy water reactor cooled by carbon dioxide (HWGCR – 150MW) was shut down in 1977 after an INES 4 accident. Currently, the plant is in its **first phaseout stage.**

Operated nuclear facilities

Jaslovské Bohunice temporary storage of burnt fuel stores burnt fuel from the NPP V-1, NPP V – 2, and NPP Mochovce 1,2, before its transport to the re-processing plant or before its permanent storage.

Technology of processing and treatment of radioactive nucklear waste (RAW), Jaslovské Bohunice includes two bitumen lines, cement line, and the Bohunické RAW processing centre. Bitumen lines with the capacity of 120 l/h are designed to process RAW concentrates from the operation of nuclear power plants. RAW is processed into 200 litre barrels placed into fiber-concrete containers before its final storage.

National discharge site of radioactive waste Mochovce is a multi-barrier discharge site of the surface type, designed for final storage of solid and solidified RAW generated at the operation and phaseout of NPP, at research institutes, in laboratories, and in hospitals in Slovakia. As of the end of 2006, there were more than 1200 pcs of fiber-concrete containers for low to medium-active radioactive waste stored in this facility.

Nuclear facilities under construction

Construction of the centre for processing and treatment of liquid RAW from the operation of NPP blocks in Mochovce 1.2 continued in 2006. Each NPP implements a Coplex programme of minimization of RAW generation. The programme is evaluated through annual reports.

Nuclear facilities to be phased out

In 2006, NRA SR issued a permit to initiate the I. phaseout stage of the radioactive waste incinerator and bitumen line.

- **Handling with radioactive waste**

During 2006, RAW was transported from the site of its generation or storage to the individual processing technologies. More than 200 pcs of fiber-concrete containers were transported to the national discharge storage site of radioactive waste. During the year 2006, major occurrences that would lead to accidents or malfunctions did not occur at the radioactive waste handling or transport facilities.

Storage 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 storage. National RAW discharge storage site in Mochove stores and discharges RAW generated in Slovakia. 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 storage site of radioactive waste. It is assumed that spent nuclear fuel and this type of RAW will be stored into a subterranean storage site. Its construction is currently in the engineering stage since 1996. SR also contributes to the cooperation among coutries in the development of the regional subterranean storage site within the 6th framework EU programme.

Noise and vibrations

In December 2005, the Act **No. 2/2005 on assessment and control of noise in the exterior** and on amendment to **the NR SR Act No. 272/1994 Coll. on public health protection** as amended, was adopted. Acceptable noise levels are deermined by the **SR Government Decree no. 339/2006 Coll.,** which sets forth details on the acceptable noise values, infrasound values, and vibration, and on requirements for objective assessment of noise, infrasound, and vibrations.

Systematic monitoring of public noise load has not been carried out since 2006. Available are only the results from monitoring activities implemented at random sites (within investigation proceedings following public complaints, etc.).

Road transport is the major source of environmental noise in the SR. Recently, this noise source has shown a growing trend, especially due to an increasing intensity of individual road transport – the least environmentally-friendly option. Increase in this type of noise in larger cities is 40 % over the last decade. Truck transport also contributes to the overall noise load from transport.

Railway transport is also a major noise source, due mainly to the lack of up-to-date technical level and insufficient maintenance of railways located in the vicinity of residential homes, with no adequate noise-surpressing measures.

Air transport is a major source of noise load for the eastern part of Bratislava and the adjacent viallages. Situation in the cities of Košice, Trenčín, Zvolen, and Sliač is also problematic. The military airport in the district of Malacky is a significant source of noise, especially during military air trainings.

Recently, technical infrastructure components of buildings, including heating houses, cooling, air-conditioning, and pneumatic facilities, have also been among the stationary noise sources. These also include production facilities and large shopping centres.

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

Centre for chemical substances and products (CCHSP), is the national authority in the area of chemicals and products. Its mission is to manage the safety of chemical substances, products and detergents, in relation to their introduction to market, as well as authorization and registration of biocidal products in accordance with the EU legislation for life and health protection, and in compliance with environmental protection principles.

MoE SR has contuinued in its close cooperation with the supervising authority over the chemical legislation (SR Ministry of Economy). MoE SR took on the following functions:

- implementation and transposition of the EU legislation in the area of chemicals and products into the Slovak legal system,
- development of common positions for ad-hoc meetings of the REACH taskforce group, preparation of instructions, and development of positions for various conferences on the proposed REACH management,
- development of a material for the Slovak accession to the Rotterdam convention.

In June 2006, the SR Ministry of Economy submitted to the Government a document on the approval of the Slovak accession to the **Rotterdam Convention on the Prior Informed Consent Procedure for Certain Hazardous Chemicals and Pesticides in International Trade** (Convention), which is a significant international legal instrument for the improvement of international regulation of trade with certain hazardous chemicals and products for the protection of plants. SR Ministry of Economy functions as the administrative authority for the selected industrial chemicals and selected products for the protection of plants. The Ministry is meanwhile the contact site for the area of

selected industrial chemicals. Ministry of agriculture is the contact site for the area of selected products for the protection of plants.

CCHSP cooperates with the Slovak Environment Agency and Regional Health Institute in Banska Bystrica in the area of **assessment of new chemicals** at the national level. CCHSP updated and revised the reports on risk assessment for two new chemicals – Dusantox L and Dusantox SPPD, adding the accompanying information by the notifier. It requested a cooperation of other responsible authorities in the member countries in the assessment of other two chemicals – Dastib 845, and Benzylpethidine Base, that were announced before May 1, 2004 in another member country. Due to the fact that the manufacturer resides in Slovakia, EC transferred on to CCHSP the responsibility for developing the documenting report, developing the risk assessment, and proposing the tests.

Pesticides

Preliminary position statement of the Slovak Republic (in August 2006) together with **preliminary positions for the meetings of the Task Force group for the area of environment** were developed and approved to accompany the EU documentation on pesticides. Space for professional discussion and clarification of opinions to the mentioned documents was created within the activities of the Specialised Commission for plant protection products and mechanisation agents. The Commission was formed under the provision of an effective Act 193/2005 Coll. on phytomedical care within the scope of the SR Ministry of Agriculture. MoE SR and its professional institutions including WRI, SHMI are also part of this commission.

Xenobiotics in the food chain

Monitoring of the cccurrence of xenobiotic substances in the components of environment and the products of agricultural and food production is carried out in two ways – through a random control, and a regular monitoring.

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 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.

- **Monitoring of xenobiotics in the food chain**

Partial monitoring system called: **Xenobiotic in foods and forage** is composed of three subsystems:

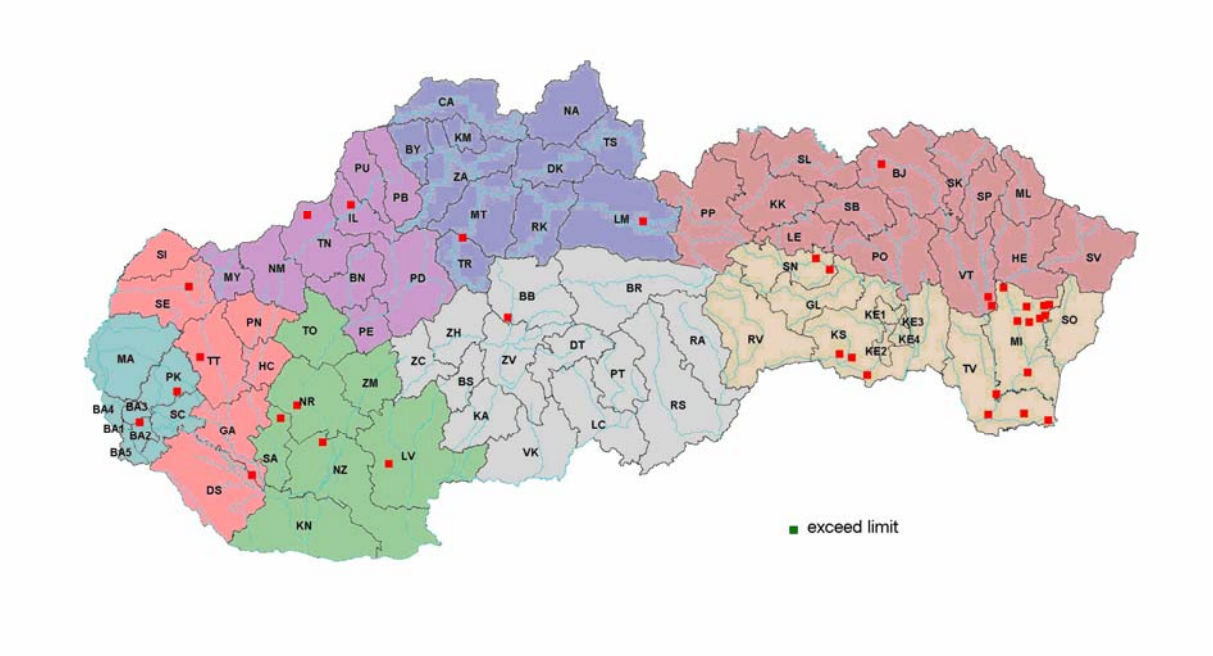
- Co-ordinated focus-specific monitoring (CFM) has been used since 1991
- Consumption pool monitoring (CPM) has been used since 1993
- Monitoring of game, wildlife, and fishes (MGF) has been implemented since 1995

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.

In 2006, total number of 1 997 samples were extracted and subsequently analysed for content of chemicals, polychlorinated biphenyls (PCB), nitrates, and nitrites. Monitoring was implemented for 78 agricultural subjects in 47 districts, with analysis of the soil samples from 35 822 ha, including the crop produced from the soil.

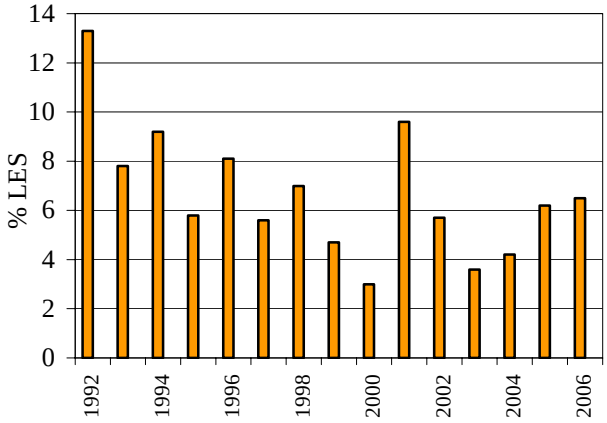
Monitored sites within the CFM with occurrence of the exceeding values of the xenobiotics in all monitored commodities in 2005



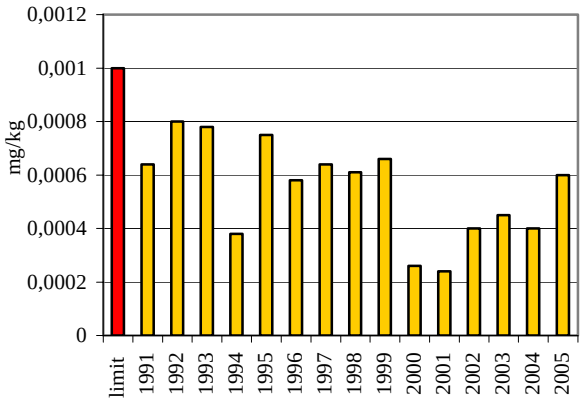
Source: SEA, FoRI SR

Of total number of extracted samples, **0.5 %** (10 samples) **did not comply** with set limit values. Unacceptable findings were recorded for the following commodities: water for animal feed (7 samples – iron, mangane, nitrates), forages from hunts (2 samples – nitrates), raw material of the animal origin (1 sample – mercury in the beef liver).

Comparison of percentage changes of the limit-exceeding samples (LES) of all xenobiotics since 1991 in all commodities together (%)



Comparison of the average findings of mercury in milk since 1991

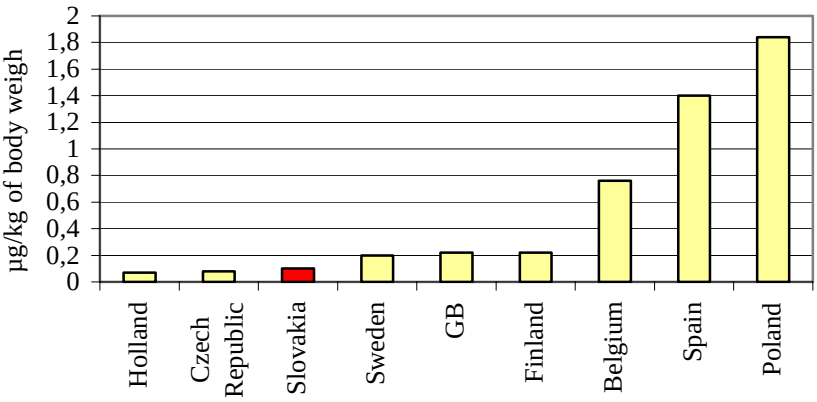


Source: FoRI

The major selected chemical contaminants include cadmium, nitrates, nitrites, and PCB.

Objective of the **Consumption pool monitoring (CPM)** is to obtain data on contamination of foods within the consumer network and subsequently assess exposition of the population to the monitored contaminants. Samples are purchased from the commercial network twice a year (May, September) at 10 Slovak sites. 27 basic food items is 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). **In 2006,** 668 samples (20 924 analyses) were analysed, including 11 samples (1.6 %) that were unacceptable. Limit-exceeding values were recorded for the following: fruits (2 samples – pesticides), pork (1 sample – residues of antibiotics), fruit products (2 samples – pesticides), beer, malt (3 samples – nitrosamines), drinking water for the population (3 samples – PAH, mercury, lead).

Comparison of the weekly absorption of mercury by the human organism between Slovakia and other world countries



Source: FoRI

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 2006 tested 139 samples of clove-hoofed game, hunting fish, fungi, lichens, small feather game, and water. Of 1 400 analyses, 42 exceeded the limit values. Monitoring continued with its focus on acquiring information on environmental loads, especially on the occurrence of levels of contaminants such as PCB, persistent organic pollutants, dioxins, and high-risk substances in fish caught from rivers and lakes of the east-Slovakia region.

- **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

Waste management in the SR entered a new phase through adopting a new **Waste Management Programme of SR for the years 2006-2010,** approved by the Government Resolution 118 of February 15, 2006.

Since 2006, it is prohibited to eliminate **biologically degradable waste** from yards and parks, including the waste from graveyards and other greenery from the lands of legal entities, natural persons, and civic associations, if part of the municipal waste. The prohibition eliminated the disposal of any "green bio-waste", which limited its deposition on landfills, in compliance with the EC strategy.

Since January 1, 2006, the possibility to continue to keep an **old vehicle** on the basis of an affidavit was no longer applicable.

Strengthened competencies of the SEI within the **trans-boundary waste transport** include more power to carry out revisions at waste generation sites.

Balance of waste generation

Waste generation (t)

Waste category	Amount (t)
Hazardous waste	666 645
Other waste	16 598 420
Municipal waste	1 623 306
Total	**18 888 371**

Source: SEA, SO SR

Generation of waste located on the market (t)

Waste category	Amount (t)
Hazardous waste	535 068
Other waste	12 349 065
Municipal waste	1 623 306
Total	**14 507 440**

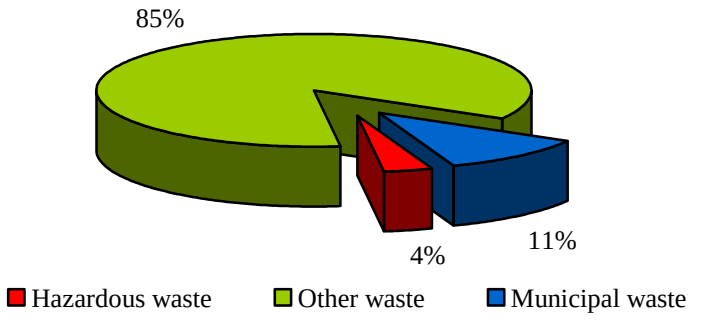
Source: SEA, SO SR

Compared to 2005, the annual increment in waste put on the market is about 33 %. **Other waste** is the greatest waste category responsible for this situation, with as much as 40 % annual increment.

The increase existed in hazardous waste generation by 5 %, 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.

Percentage share of waste categories on total amount of generated waste in 2006



Source: SEA

In the area of waste generation **by economic activities** classification, **manufacturing industry** has been the **dominating** component over the recent years, **with 58 %** share. Sector of transport and communications follows with 19 % (the annual increment of this sector was over 2 mil. tons of waste), building industry with 7 %, agriculture with 6 %, and trade with 4 % share. It is necessary notice that the amount of waste by particular economic sectors is not calculated municipal waste.

Waste generation by particular economic sectors in 2006 (t)

Economic sector	Total	Hazardous waste	Other waste
Agriculture	741 444.24	25 947.38	715 496.86
Fishery	519.01	0.77	518.24
Industry total	7 525 034.45	331 264.09	7 193 770.35
Building industry	916 229.95	11 152.69	905 077.26
Trade	459 151.13	40 609.55	418 541.57
Hotels and restaurants	1 689.31	157.89	1 531.42
Transport and communications	2 407 595.21	64 193.80	2 343 401.41
Banking and insurance sector	2 469.24	32.45	2 436.79
Activities in domain of real estate	115 728.59	9 126.48	106 602.11
Public administration and defence	61 079.30	414.39	60 664.91
Education	810.70	155.52	655.17
Health service	79 912.16	6 306.68	73 605.49
Waste water treatment and waste disposal	283 122.93	34 754.23	248 368.70
Unknown	289 347.12	10 952.52	278 394.60
Total	**12 884 133.33**	**535 068.46**	**12 349 064.88**

Source: SEA

Waste treatment

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).

Waste disposing

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	107 300.58	99.98	107 200.60
O	Handing over to another subject	803 052.79	40 821.45	762 231.34
Z	Storage of waste	162 523.91	5 104.11	157 419.80
Total		**1 072 877.28**	**46 025.54**	**1 026 851.74**

Source: SEA

Waste recovery

There were **5 625 984 tons of waste recovered** in the SR in 2006. This represents **39 % of total volume of waste** located on the market. Despite the fact that great volumes of reclaimed waste grew almost by 1 mil. tons since 2005, volume of reclaimed waste in terms of its share on total waste generation dropped by 5 %. R5 activity – Recycling or re-extraction of other inorganic compounds has the greatest share on waste reclamation (45 %). R3 activities – Recycling or re-extraction of organic compounds that are not used as solvents (including composting and other biological transformation processes) show a 16 % share, R10 activities – tratment of soil for the purposes of agricultural returns or for improving the environment show a 14 % share, and R4 – recyclig or re-extraction of metals and metallic compounds shows an 11 % share.

Waste recovery following codes R1 – R13 in year 2005 (t)

Code of recovery	Total	Hazardous waste	Other waste
R01	265 351.95	8 764.83	256 587.12
R02	5 547.53	5 395.81	151.72
R03	886 766.05	24 529.49	862 236.57
R04	599 862.59	11 819.57	588 043.02
R05	2 545 692.55	49 127.83	2 496 564.72
R06	849.63	849.07	0.56
R07	104.97	53.96	51.01
R08	171.42	164.70	6.72
R09	12 118.44	11 593.93	524.51
R10	800 771.22	12 638.78	788 132.44
R11	161 819.86	837.06	160 982.80
R12	46 360.34	2 920.61	43 439.73
R13	300 567.74	10 638.68	289 929.06
Total	**5 625 984.30**	**139 334.32**	**5 486 649.98**

Source: SEA

Waste disposal

Of total volumes of generated waste, **43 % of waste was disposed,** which in absolute numbers means **6 185 272 tons of waste.** Dominance of landfill waste is a historical rule, with a 91 % share on total waste disposal. Compared to 2005, volumes of waste disposed of at landfills doubled. This suggests that the year 2005 with its low volumes of waste disposed of at landfills was rather an exception. As of December 31, 2006, there were 160 landfills operated in Slovakia.

Number of landfills (towards 31.12.2006)

Region	Hazardous waste landfills	Landfills for not hazardous waste	Inert waste landfills	Total
Bratislavsky	2	6	2	10
Trnavsky	2	17	1	20
Trenčiansky	1	14	3	18
Nitriansky	3	19	2	24
Žilinsky	1	16	3	20
Banskobystricky	1	21	3	25
Prešovsky	1	22	1	24
Košicky	3	13	3	19
Total	**14**	**128**	**18**	**160**

Source: SEA

Waste disposal following codes D1 – D15 in year 2005 (t)

Code of disposal	Total	Hazardous waste	Others waste
D01	5 646 390.70	111 250.10	5 535 140.61
D02	197 516.02	82 841.66	114 674.36
D03	13.11	0.03	13.08
D05	421.10	253.54	167.56
D08	108 299.27	26 210.01	82 089.27
D09	77 215.46	62 403.40	14 812.06
D10	98 850.98	49 146.53	49 704.45
D11	8.42	0.13	8.30
D12	24.14	0.67	23.47
D13	5 730.26	77.09	5 653.18
D14	833.75	309.02	524.73
D15	49 968.54	17 216.42	32 752.12
Total	**6 185 271.76**	**349 708.59**	**5 835 563.16**

Source: SEA

The important share of waste disposal, with 3 %, has D2 method, following D8 method, biological treatment which is generated wastes disposed by methods marked as D1 to D12 and method D10 – incineration on land contributes by 2 %.

Waste from electrical and electronic equipment (WEEE)

The year 2006 was the first complete year that brought practical information on the system of handling electrical appliances and electric waste. Producers of electrical appliances are obliged to meet the limits for 10 categories of waste collection, reclamation or recycling, as well as re-use the electric waste.

To ensure that these obligations are met, producers gathered together to form collective systems.

Collective systems in SR in 2006

Collective system	Category
ENVIDOM – Association of producers of electrical appliances for recycling	Categories 1 and 2
SEWA, Inc.	All categories
EKOLAMP Slovakia – Association of producers and distributors of lighting equipment	Category 5
ETALUX – Association of producers and suppliers of lighting equipment	Category 5
ENVI-GEOS Nitra, Ltd.	All categories
ENZO-VERONIKA-VES, Inc.	All categories
ELEKTRORECYKLING Ltd.	All categories
Brantner Slovakia, Ltd.	All categories
ZEO, Ltd.	Category 6
LOGOS Slovakia, Ltd.	All categories

Summary reports by producers of electrical equipment for the year 2006

Category under Annex 3 of the waste law	Introduced to market (kg)	Collected (kg)	Processed (kg)	Recovered (kg)	Recycled (kg)
1. Big domestic appliances	26 965 492.83	4 880 656.00	4 880 656.00	4 413 900.41	4 333 319.55
2. Small domestic appliances	3 889 013.05	477 121.00	477 121.00	394 162.31	331 776.44
3. IT and telecommunication devices	5 723 479.60	857 904.00	857 284.00	761 010.04	637 314.59
4. Consumer electronic devices	6 794 705.05	1 800 214.00	1 800 214.00	1 526 073.65	1 401 654.40
5. Sources of light	3 278 331.13	95 050.00	95 170.90	76 879.27	66 149.23
5a.Gass lamps	493 320.12	144 514.00	137 380.00	120 415.52	120 415.52
6. Electrical and electronic instruments	3 376 681.78	80 428.00	80 428.00	63 813.63	54 299.79
7. Toys, devices designated for sport and recreational use	519 638.76	2 650.00	2 644.00	2 403.69	2 165.44
8. Medical devices	67 960.29	30 778.00	31 438.00	27 017.30	25 716.91
9. Machines for monitoring and testing	53 789.02	33 993.30	33 993.30	29 799.77	28 130.54
10. Vending machines	180 074.00	180 119.00	180 844.00	163 067.03	158 350.00
	51 342 485.63	**8 583 427.30**	**8 577 173.20**	**7 578 542.62**	**7 159 292.41**

Source: SEA

There were placed on he market 51 thousand tons of electrical devices in Slovakia in 2005 (10.4 kg per habitant). Amount of collected WEEE was approx. 8.3 thousand tons (1.6 kg per habitant).

Old vehicle

There were 723 old vehicle processed in 2004, 3 922 in 2005 and 19 446 in 2006. In 2008 were operated 18 authorised facilities of old vehicle treatment.

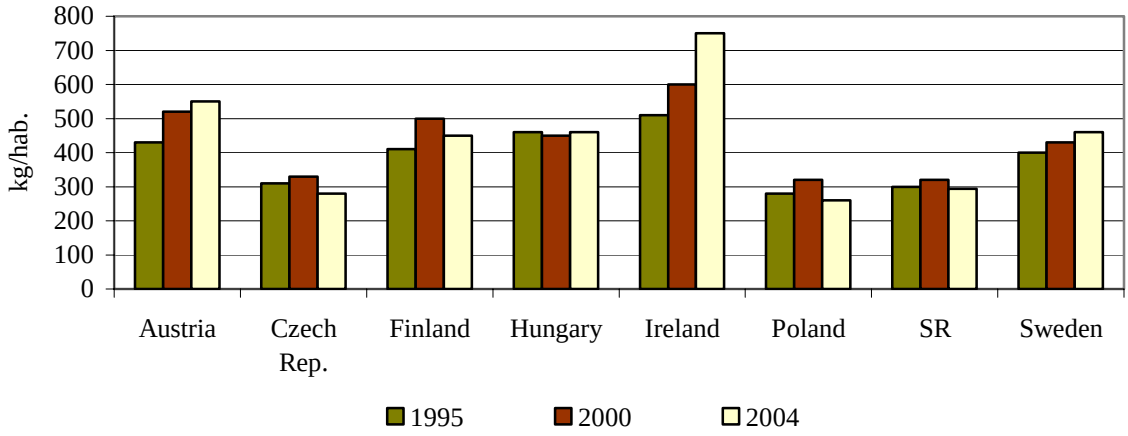
Municipal waste

According to data from the SO SR, there were **1 623 306 tons of total municipal waste** generated in Slovakia in 2006. This volume represents **301 kg of municipal waste per capita.** Compared to 2004, this is an increase by 12 kg per capita. Long-term waste **disposal on landfills** (78 %) is the **most frequent method** of municipal waste handling, following by incineration (5 %) and composting by 3 %.

In terms of **municipal waste composition**, mixed municipal waste (71 %) constitutes the major component of municipal waste together with bulky waste (9 %), small construction waste (6 %). Biologically degradable waste was 5 % and waste from street cleaning was 3 %.

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 the same as in 2005 Volume of **recovered municipal waste per capita increased by 15 kg**.

Municipal waste generation – international comparison (kg/habitant)



Source: OECD

Municipal waste generation and disposal (t)

Region	Total	D01	D02	D05	D07	D08	D09	D10	D11	D13	D14	D15	DO	O
Bratislava	**249 456.45**	95 083.94						128 433.80	240.00					2 964.71
Trnava	**239 358.39**	216 620.43		1 173.79				2.00						9 569.78
Trenčin	**176 419.49**	157 681.37	1.50	0.10	20.00	10.00	2.79	0.01		5.72	1.00	3.24		7 699.45
Nitra	**224 442.79**	203 412.74		891.26								0.83	34.00	8 077.52
Žilina	**205 626.68**	191 593.24											1.00	7 889.95
Banska Bystrica	**163 116.80**	146 391.05												14 423.18
Prešov	**184 382.79**	145 988.35		344.85			4.65	100.79				761.82		19 022.01
Košice	**180 503.09**	102 842.01						61 217.78				1 304.10		12 226.37
Total	**1 623 306.48**	**1 259 613.13**	**1,50**	**2 410.00**	**20.00**	**10.00**	**7.44**	**189 754.38**	**240.00**	**5.72**	**1.00**	**2 069.99**	**35.00**	**81 872.97**

Region	R01	R02	R03	R04	R05	R0	R0	R8	R09	R10	R11	R12	R13	Z
Bratislava	13.00		6 920.73	1 186.14	570.85					16.00	2.70		14 024.58	
Trnava	15.00	0.09	9 021.59	103.10	717.14		0.50		0.13		4.30	11.52	117.96	2 001.06
Trenčin	18.09		5 583.29	247.56	1 271.43	2.97		4.50	9.99	3.30	234.89	3.18	3 190.86	424.25
Nitra			7 817.63	53.38	1 126.23				10.92	210.10	11.56	1 279.55	260.55	1 256.52
Žilina	5.75		4 807.72	304.98	540.16									483.88
Banska Bystrica	144.03		1 056.18	77.96	711.85								3.62	308.93
Prešov	29.12		16 011.32	258.86	823.57				0.33	19.40	0.55	0.66	938.11	78.40
Košice	12.40		362.28	158.26	1 084.57				0.02			74.35	1 064.20	156.75
Total	**237.39**	**0.09**	**51 580.74**	**2 390.24**	**6 845.80**	**2.97**	**0.50**	**4..50**	**21.39**	**248.80**	**254.00**	**1 369.26**	**19 599.88**	**4 709.79**

Source: SO SR

Financial mechanisms of waste management

♦ **Recycling fund**

The recycling fund completed its five-year existence in 2006.

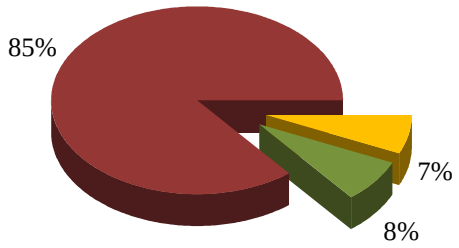
In 2006, the Fund gathered from the importers of ten charged commodities almost 565 million SKK. Fund revenues from contributions were not even 65 % of the 2002 revenues. Compared to the previous year, revenues were lower by 80 million SKK.

The fund paid almost 17 million SKK to more than 1 500 applications for contribution for separated waste, submitted by municipalities. The Waste Act recognizes the right of the municipalities to be paid a contribution of 1 300 to 1 800 SKK per ton of waste sent to be reclaimed.

♦ **Environmental Fund**

In 2006, the Environmental Fund for waste management received 187 applications for total volume of 490 mil. SKK in subsidies. Of the total number of 187 applications in the area of waste management, 86 applicants were funded, with the amount of 137 mil. SKK.

Proportion of granted financial support from the Environment Fund in 2006 by supported activities



Separated collection of waste introduction and construction of collection yards
Separation and reclamation of bio-waste
Demolition and reclamation of abandoned landfills

♦ **Structural EU Funds**

In recent years, structural EU Funds within the Basic Infrastructure Operation programme provided significant amount of funding for the development of waste management infrastructure. During the programme period of 2004-2006, 56 applications were approved as of June 15, 2007, amounting to 786 mil. SKK on non-repayable contributions. The State budget contributed with more than 367 mil. SKK, which amounts to 1 152 mil. SKK of total funding. The applicants participated with the total sum of 334 mil. SKK, including the public sector's contribution to projects at 5 %, which represents 35 mil. SKK, and the private sector contributing with the sum of 298 mil. SKK. Total amount of released funding is 1 487 mil. SKK. Projects that were approved and for which are 21 projects in the depository.

Released funding by type of supported activity for the years 2004-2006

Activity	Total funding
Support of activities relating to separated collection of waste	95 637 702 SKK
Support of waste reclamation activities	786 197 562 SKK
Shutdown and reclamation of landfills	604 682 451 SKK

Source: MoE SR

Packaging and waste from packaging

Volumes of packaging waste generated in the SR and recovered or incinerated in waste incinerators with energy recovery technologies (t)

Material		Packaking waste	Recovered waste or waste incinerated with energy recovery			
			Material recycling	Recycling total	Waste incineration with energy recovery	Waste and energy recovery and waste incineration in total
Glass		99 901	50 052	50 052	-	50 052
Plastics		90 205	16 290	16 290	10 644	26 934
Paper/cardboard		124 100	24 987	24 987	31 818	56 805
Metals	**Aluminium**	3 076	628	628	-	-
	Steel	13 579	6 161	6 161	-	-
	Total	16 655	6 789	6 789	-	6 789
Wood		15 839	5 154	5 154	5 497	10 651
Total		**346 700**	**103 272**	**103 272**	**47 959**	**151 231**

Source: MoE SR

Trans-boundary movement – import, export and transit of waste

For its licensing of transport waste over national borders in 2006, the MoE SR followed the EEC Council Regulation 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 the area of waste management. In compliance with the Treaty of Accession of Slovakia to the EU, also the import of waste under Annex II of the Directive (Green list waste) was allowed.

Over the period of 1.1.2006 to 31.12.2006, the MoE SR issued **194 decisions on trans-boundary transport of waste**, including **144 import licenses** (in total **748 330 tons** of waste), **36 export licenses** (in total **208 690 tons** of waste), **14 licenses** for **transit transport of waste** (in total **47 342 tons** of waste).

Summary of the number of effective licenses for trans-boundary transport of waste, issued in 2006

Issued in year	Import	Export	Transit	Total
2006	51	9	5	**65**
>2006	93	27	9	**129**
Total	**144**	**36**	**14**	**194**

Source: SEA

♦ **Waste import**

Of total number of 144 licences regarding the import of waste for recovery, **5 licences** were issued to allow the **import of hazardous waste** at total volume of **2 390 tons.** 14 licences were issued to import waste for energy extraction (through R1 activity) at total volume of 146 400 tons. The waste was imported from Austria, Hungary, Germany, and Czech Republic. 130 licences were issued to import waste for reclamation of material at total volume of 601 930 tons.

Licences issued in 2006 allowed waste import from 11 countries. Import from 8 countries made up 97.9 % of total permitted imported volumes.

♦ **Waste export**

Of total number of 36 licences regarding the export of waste for reclamation, 16 licences were issued to allow the export of hazardous waste at total volume of 9 899.5 tons.

Licenses to export waste in 2006 involved 14 categories of waste, with 6 waste categories classified as the green list waste. In the area of permitted volumes for export, most exported waste included the green list waste (Annex II of the Directive), which was 94.7 %.

Total permitted volumes of waste by individual countries

Country/ISO code	Import to SR (t)	Export from SR (t)
Belgium	-	7 200
Belorussia	240	-
Czech republic	139 480	2 040.5
Netherlands	250	-
Hungary	204 600	200
Poland	170 400	116 400
Austria	173 070	600
Romania	5 000	-
Germany	39 540	189
Switzerland	500	-
Ukraine	15 050	82 000
Great Britain	200	60
Total	**748 330**	**208 689.5**

Source: SEA

♦ **Waste transit**

MoE SR decisions for transit transport issued in 2006 made it possible to transport 7 waste categories in total waste amount of 47 342 tons of waste.

Decisions of the MoE SR for transit of waste in 2006 allowed transport through the SR territory from the Federal Republic of Germany (30 792 t), Hungary (6 500 t), and Romania (1 020 t) and from Serbia and Monte Negro (6 000 t) to the facilities located in the destination countries.

***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

In 2006, there was an increased number of occurrences that deteriorated the quality of surface and ground water. SEI alone registered 151 of emergency deteriorations or threats to water quality (EDW).

Special declination or quality menace of water of the SR in the years 1993-2006

Year	EDW 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
2006	151	94	0	3	57	6	51

Source: SEI

In 2006 again, in terms of hazardous compounds (HC), deterioration of water quality was caused mainly by crude oil compounds in 69 cases (45.7 %), waste water in 28 cases (18.5 %), and in 22 cases (14.6 %) no contaminant was detected. Livestock excrements in 14 cases (9.3 %), insoluble substances, caustic alkali, pesticides, and other toxic substances have smaller impact on EDW.

Progress in number of EDW according to the sort of HC in the years 1994-2006

Sorts of water deteriorative substances	1994	1996	1998	1999	2000	2001	2002	2003	2004	2005	2006
Oil substances	63	69	61	54	33	40	64	59	70	63	69
Alkalis	3	5	3	5	2	2	5	3	1	0	3
Pesticides	1	1	3	1	0	0	1	0	3	0	2
Excrements of farm animals	9	14	3	7	5	4	9	21	15	14	14
Silage fluids	0	1	0	2	4	0	2	1	1	0	0
Industrial fertilisers	0	0	0	0	0	0	0	1	0	0	0
Other toxic substances	5	1	0	6	12	5	3	3	0	4	4
Insoluble substances	4	4	7	1	5	2	6	11	3	4	3
Waste water	6	6	17	6	10	10	17	35	20	10	28
Other substances	13	9	6	4	2	1	3	7	10	8	6
Water detrimental substances impossible to determine	17	7	17	12	9	7	17	35	14	10	22

Source: SEI

In 2006, there was 1 EDW outside the Slovak territory, in Austria. Foreign nationals caused 13 EDW in Slovakia. Two EDW were caused by ship transport. Other EDW were caused by vehicle transport subjects.

Just like in the previous years, in 2006, human factor and poor technical condition of equipment or facilities for hazardous substances were the most frequent causes for EDW. High number of EDW was caused by transport (38) and transfer of hazardous substances (6).

Accidental deterioration of air quality

In 2006, Air Protection Inspectorate Division of SEI, recorded eight events that caused deterioration in air quality. Causes for EDW included insufficient tightness on supply pipes (2), extremely low ambient air temperature (2), malfunction of electro-engine of the suction devise, fire, and faulty manipulation at HCL compaction. Only one incident is still under investigation.

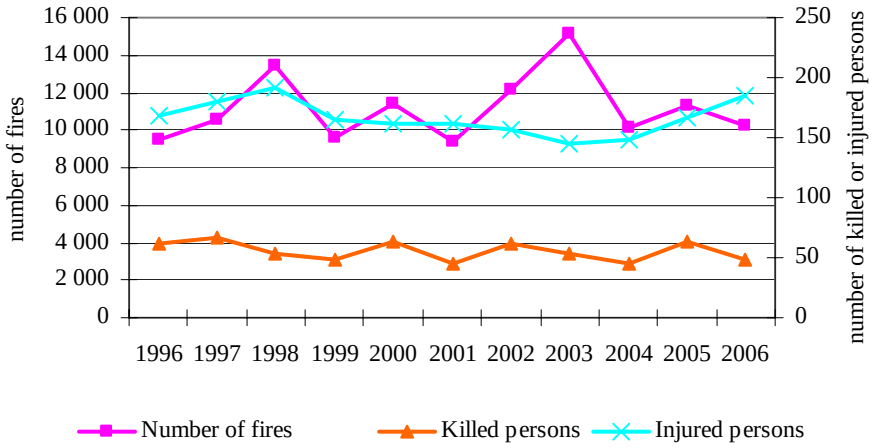
Fire risk

In **2006** were documented in the SR **10 260** fires, causing 49 casualties and 185 injured. Direct material damage reached 817 053.5 thous. SKK, while the volume of preserved values was calculated at 3 231 641 thous. SKK.

Compared to previous years, greatest number of fires originated surprisingly in the **household sector** – 1 830, with direct material damage amounting to approximately 134 713 400 SKK. In total, they resulted in 38 deadly casualties and 120 injured people. In terms of fire statistics, **agriculture** shows the second greatest

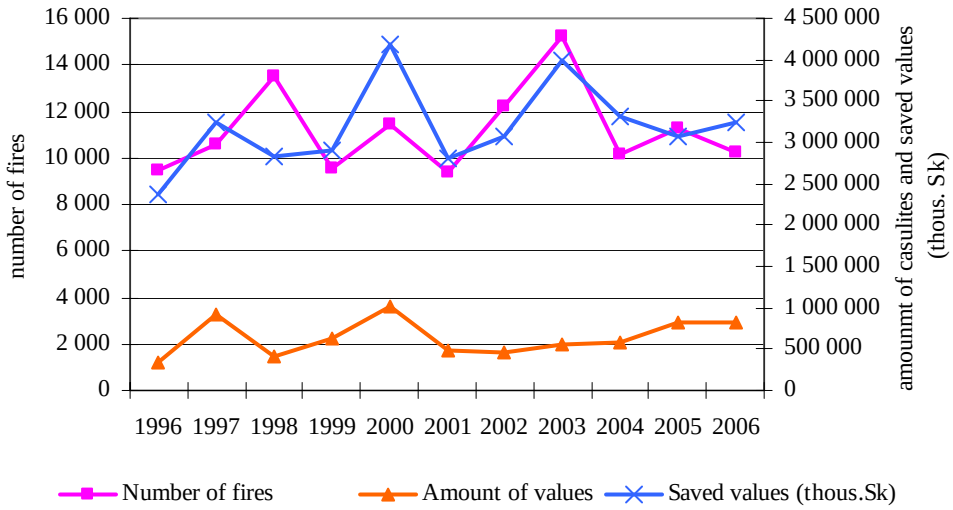
number of fires – 1 552, occasioning direct material damage at 47 100 200 SKK, killing 2 persons, and injuring 3. Least number of fires was recorded in the **commercial** sector**,** with 138 direct material damage events, totalling 91 011 900 SKK. Overall situation in fires in Slovakia in 2006 shows **lower** numbers **by 1 034**, compared to 2005. Material damage; however, was **greater by 3 558 600 SKK.**

Relationship between number of fires and number of killed or injured persons in 1995-2006



Source: FPRS MoI SR

Relationship between number of fires and number of casualties or amount of saved values in 1995-2006



Source: FPRS MoI SR

Floods

In 2006, there were 512 municipalities affected by floods. 11 420 inhabitants felt the aftermath of the floods, including 915 persons who had to be evacuated. 75 inhabitants temporarily lost their houses. 97 persons were rescued by rescue activities, 1 person died.

Total cost and damages by floods in the SR in 2006 amounted to 2 799.644 thous. SKK, including the rescue costs of 180.348 mil. SKK, and safety works of 193 398 thous. SKK.

Material damage amounted to 1 442 988 thous. SKK, including the damage to the State property at 236 550 thous. SKK, and damage to private citizens' property was 123 203 thous. SKK, and damage to municipal property was 324 506 thous. SKK, damage to higher territorial governing units was 250 990 thous. SKK, and damage to other subjects was 507 739 thous. SKK. Flood prevention construction measures at water courses were damaged, resulting in damages at 982 910 thous. SKK.

Floods aftermath over the period of 1999-2006

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
2006	512	30 730	2 425.90	180.35	193.4	2 799.64

* including also the sum of 6.0 mil. SKK – cost of anti-mosquito chemical spray treatment Source: MoA SR, MoE SR

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 2006 included the following legislation in the area of environmental protection.

Acts

- **Act 241/2006 Coll.** on environmental impact assessment and amendments to other laws,
- **Act 124/2006 Coll.** on work safety and amendments to other laws,
- **Act 126/2006 Coll.** on public health and amendments to other laws,
- **Act 127/2006 Coll.** on persistent organic compounds and amendment to Act 223/2001 on waste and amendment to other laws as amended,
- **Act 184/2006 Coll.** on cultivating genetically modified crop in agriculture,
- **Full text of Act 223/2001 Coll.** on waste and amendments to other laws (notice no. 409/2006),
- **Act 528/2006 Coll.**, which amends Act 238/2006 Coll. on National Nuclear Fund for Phase-out of nuclear facilities and for handling of burnt fuel and radioactive waste (Nuclear Fund Act) and on amendment to other laws.

Government Ordinances

- **SR Government Ordinance 18/2006 Coll.** on amendment to SR government ordinance 280/2004 Coll., which stipulates the conditions for introduction of reproducible vine material into the cycle,
- **SR Government Ordinance 115/2006 Coll.** on minimum health and safety requirements for the protection of workers against the risks relating to noise exposition, as amended by SR government ordinance 555/2006 Coll.,

- **SR Government Ordinance 252/2006 Coll.** on details regarding the operation of swimming pools and on details relating to recreational water quality for swimming and its control,
- **SR Government Ordinance 253/2006 Coll.** on protection of workers against the risks relating to the asbestos exposition at work,
- **SR Government Ordinance 325/2006 Coll.** on details regarding the requirements on sources of the electromagnetic field and on the limits for exposition of population to the electromagnetic field in the environment,
- **SR Government Ordinance 329/2006 Coll.** on minimum health and safety requirements for the protection of workers against the risks relating to the electromagnetic field exposition,
- **SR Government Ordinance 334/2006 Coll.** on details regarding the handling of the radioactive waste from institutions,
- **SR Government Ordinance 338/2006 Coll.** on protection of workers against the risks relating to the biological factors exposition at work,
- **SR Government Ordinance 339/2006 Coll.**, which sets forth details on the acceptable noise values, infrasound values, and vibration, and on requirements for objective assessment of noise, infrasound, and vibrations,
- **SR Government Ordinance 340/2006 Coll.** on protection of health of persons against the adverse effects the ionizing radiation at medical irradiation,
- **SR Government Ordinance 345/2006 Coll.** on basic safety requirements for the protection of health of workers and population against the ionizing radiation,
- **SR Government Ordinance 346/2006 Coll.** on requirements to ensure radiation protection of external workers exposed to the risk of ionizing radiation during the course of their activities within the controlled zone,
- **SR Government Ordinance 347/2006 Coll.**, which stipulates details on the radiation monitoring network,
- **SR Government Ordinance 348/2006 Coll.** on the requirements to ensure the control of highly active sources of radiation and abandoned radiators,
- **SR Government Ordinance 349/2006 Coll.**, which stipulates details on the requirements for the radiation safety at transport of radioactive radiators and radioactive compounds,
- **SR Government Ordinance 351/2006** on details regarding health protection against the effects of optic radiation at work,
- **SR Government Ordinance 354/2006 Coll.**, which stipulates requirements on water designated for human consumption and on controlling its quality,
- **SR Government Ordinance 355/2006 Coll.** on protection of workers against the risks relating to the exposition to chemical factors at work,

- **SR Government Ordinance 356/2006 Coll.** on protection of workers against the risks relating to the exposition to carcinogenic and mutagenic factors at work,
- **SR Government Ordinance 366/2006 Coll.** on technical requirements to reduce emissions of the pollutants from diesel engines of vehicles,
- **SR Government Ordinance 367/2006 Coll.** on technical requirements to reduce emissions of the pollutants from combustion and diesel engines of vehicles,
- **SR Government Ordinance 368/2006 Coll.** on technical requirements to reduce emissions of the pollutants from diesel and combustion engines,
- **SR Government Ordinance 374/2006 Coll.** on technical requirements to reduce carbon dioxide emissions and fuel consumption from vehicles,
- **Government Ordinance 435/2006 Coll.** on conditions for payments for agro-environmental measures,
- **Government Ordinance 438/2006 Coll.** on undesirable substances in forage and on other safety indicators and usability of forage,
- **Government Ordinance 439/2006 Coll.** on forage raw material,
- **Government Ordinance 440/2006 Coll.** on forage mixtures,
- **SR Government Ordinance 583/2006 Coll.** on technical requirements to reduce emissions of the pollutants from diesel and combustion engines with natural gas or liquefied crude oil gas propulsion.

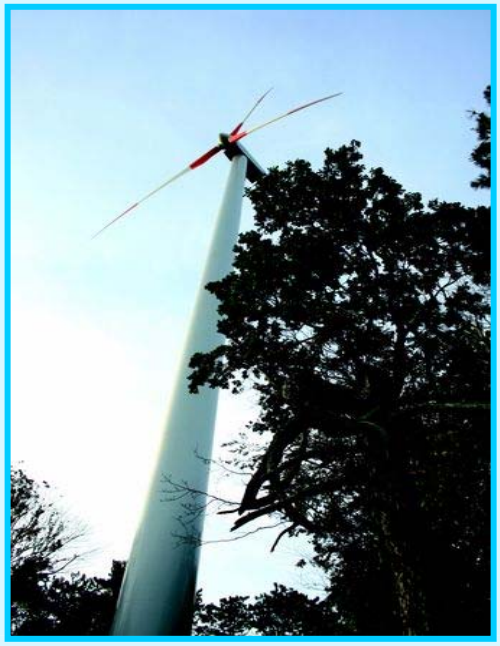
Regulation

- **MoI SR Regulation 23/2006** which executes a number of provisions of Act 544/2002 Coll. on the Mountain Rescue Service as amended,
- **Nuclear Regulatory Authority of the SR Regulation 46/2006 Coll.** on special material and devices under the supervision of Nuclear Regulatory Authority of the SR,
- **Nuclear Regulatory Authority of the SR Regulation 47/2006 Coll.** on details regarding the maximum limits to nuclear material and radioactive waste volumes with no anticipated occurrence of nuclear damage,
- **Nuclear Regulatory Authority of the SR Regulation 48/2006 Coll.** which stipulates details on approaches to incident reporting and on reporting of incidents at transport, and on details regarding the investigation of their causes,
- **Nuclear Regulatory Authority of the SR Regulation 49/2006 Coll.** on periodic assessment of nuclear safety,
- **Nuclear Regulatory Authority of the SR Regulation 50/2006 Coll.** which stipulates details on the requirements for nuclear safety of nuclear facilities at their localisation, design, construction,

launching, operation, phase-out, and close-up of depository, as well as the criteria for categorisation of selected facilities into safety categories,

- **Nuclear Regulatory Authority of the SR Regulation 53/2006 Coll.**, which stipulates details on the requirements for handling nuclear waste, radioactive waste, and burnt nuclear fuel,
- **Nuclear Regulatory Authority of the SR Regulation 54/2006 Coll.** on record keeping and control of nuclear material and on reporting of selected activities,
- **Nuclear Regulatory Authority of the SR Regulation 55/2006 Coll.** on details of accident planning for accidents or malfunctions,
- **Nuclear Regulatory Authority of the SR Regulation 56/2006 Coll.**, which stipulates details on the requirements for documenting the system of the license holder's quality, as well as on requirements on the quality of nuclear facilities, details on requirements on the quality of selected facilities, and details on the scope of their approval,
- **Nuclear Regulatory Authority of the SR Regulation 57/2006 Coll.**, which stipulates details on the requirements for transport of radioactive material,
- **MoH SR Regulation 100/2009 Coll.**, which stipulates requirements on natural healing and mineral water, details on the balneology expert report, division, scope of monitoring and content of analyses of natural healing water and natural mineral water and its products, and requirements for registering an accredited laboratory into the register maintained by the State Spa Committee,
- **MoE SR Regulation 113/2006 Coll.**, which stipulates details to carry out the environmental impact assessment,
- **MoE SR Regulation 131/2006 Coll.**, which sets forth national emission maximum limits and total number of quota for pollutants,
- **MoE SR Regulation 132/2006 Coll.**, which amends the MoE regulation 409/2003 Coll., which sets forth emission limits, technical requirements and general requirements for the operation of sources using organic solvents, and their classification,
- **MoE SR Regulation 133/2006 Coll.** on requirements for limiting the emissions of volatile organic compounds escaping at use of organic solvents in regulated products,
- **MoE SR Regulation 185/2006**, which executes a number of provisions of Act 139/2002 Coll. on fishing as amended,
- **MoE SR Regulation 234/2006 Coll.**, which declares the Special Protected Area of Sysľovské polia,
- **MoA SR Regulation 283/2006 Coll.**, which executes Act on protection of genetic sources of plants for nutrition and agriculture,
- **MoA SR Regulation 397/2006 Coll.** on forest watch,

- **MoA SR Regulation 441/2006 Coll.**, which stipulates details on professional testing of the ability to create the forest management plan, and on issuing and taking away the certificate of professional capacity to create the forest management plan,
- **MoA SR Regulation 451/2006 Coll.** on professional forest economist,
- **MoA SR Regulation 453/2006 Coll.** on economic forest regulations and on forest protection,
- **MoH SR Regulation 480/2006 Coll.** on requirements on quality, acquisition, and transport from the source to the place of treatment and loading, treatment, control of quality, packaging, labelling, and marketing of natural healing water,
- **MoE SR Regulation 488/2006 Coll.**, which amends MoE SR Regulation 53/2004 Coll., which sets forth requirements for the fuel quality and record keeping activities on fuels as amended by MoE SR Regulation 102/2005 Coll.,
- **MoE SR Regulation 492/2006 Coll.,** which amends MoE SR Regulation 24/2003 Coll., which amends Act 543/2002 on nature and landscape protection,
- **MoI SR Regulation 523/2006 Coll.** on details regarding the availability of rescue operations and organizing civil protection squads,
- **MoI SR Regulation 533/2006 Coll.** on details regarding the protection of public against the effects of hazardous compounds,
- **MoA SR Regulation 571/2004 Coll.** on sources of reproduction material of forest trees, its acquisition, production, and use,
- **MoE SR Regulation 593/2006 Coll.**, which designates the Special Protected Area of Malé Karpaty
- **MoCRD SR Regulation 625/2006 Coll.,** which amends Act 555/2004 Coll., on environmental efficiency of buildings and on amendment to other laws,
- **MoE SR Regulation 684/2006 Coll.** on details regarding the technical requirements on proposal, design documentation and construction of public water supply and public sewerage.



Environmental impact assessment is a comprehensive identification, description and evaluation of the likely environmental impact of a strategic document and a proposed activity…

§ 3 b of the Act No. 24/2006 Coll. on environmental impact assessment and on amendment to other laws

• ENVIRONMENTAL IMPACT ASSESSMENT

The year 2006 was the landmark year in environmental impact assessment, since on February 1, 2006, came into force a new **Act 24/2006 Coll. on environmental impact assessment and on amendment to other laws.**

The new act regulates the process of environmental impact assessment in its complexity, including

- strategic documents (concepts, policies, plans, and programmes) before their approval (SEA – Strategic Impact Assessment);
- proposed activities prior to a decision on their localisation or prior to a decision on their permission under special provisions (EIA – Environmental Impact Assessment);
- assessment of impacts of strategic documents and proposed activities reaching beyond the national borders (SEA/EIA);
- jurisdiction of state administration authorities and competencies of municipalities at environmental impact assessment;
- rights and responsibilities of other participants to the assessment process.

Implementation of the new legislation resulted in a full harmonisation and implementation of generally binding legislation with the EU legislation in the area of environmental impact assessment (SEA/EIA).

For the **year 2006,** the environmental impact division of the MoE SR completed the assessment of **251 buildings, facilities, and other activities** through local and regional environment authorities. Since February 1, 2006, there have been **245 decisions** within the EIA process. Assessed were also

strategic documents, 43 of them assessed at local environment authorities, **16** of them assessed at the MoE SR.

Outcomes of the EIA process in 2006 – the MoE SR level

Number of assessed buildings and activities at MoE SR - EIA	251
Number of decisions issued at MoE SR	133
Number of final positions issued	118
Number of assessed drafts of strategic documents - SEA	16

MoE SR keeps the **central register** of all assessed strategic documents and proposed activities as the commissioned authority on behalf of the SR, in cooperation with Slovak Environmental Agency, using the information system for environmental impact assessment in Slovakia. For all available information, go to http://eia.enviroportal.sk/

Complete documentation (hard copies) from the EIA process of proposed activities carried out and completed by MoE SR since 1994 until 2002 are archived in the **EIA Documentation centre** at Slovak Environmental Agency. Documentation as from January 1, 2003 until the end of 2006, is kept at MoE SR. Documentation of the processes carried out by regional and local environment agencies is archived at individual authorities.

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)**.

In October 2003, came into force a MoE SR Regulation 391/2003 Coll., which executes Act on IPPC, and which regulates the process and form of acquiring a certificate of professional training to offer professional counselling in the area of IPPC. The Resolution also specifies the data to be acquired and notified by the IPPC operators before February 15 of each year.

Slovak Environmental Inspection is the administration authority in the process of integrated licensing and issuing of integrated licenses. As of December 31, 2006, **276 valid integrated licenses** were issued, out of the total number of **5005 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 Regulation 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 (laboratories, greenhouses, cultivating rooms, and other enclosed facilities) 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 2006, 63 facilities were entered into the register of facilities. License was given to 63 facilities for their first use of genetic technologies, while 81 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 2006, 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, or did it receive any applications for issuing such licences.

Commission for the biological safety (commission) is the professional consulting body to the Ministry of Environment of the SR 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 2006, there were 7 sessions of the commission. 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*" (EVV), 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. The Programme aims to apply the environment creation and protection aspects into product strategy, through implementation of the environmental tender criteria.

Number of products with the right to use the EVV labelling

Year	Number of products (EVV)
1997	11
1998	22
1999	24
2000	20
2001	26
2002	29
2003	47
2004	79
2005	96
2006	103

Source: SEA

Regulations represent the basic technical document of the *National Programme of Environmental Assessment and Product Labelling in the SR (NPEAPL)*, which carries out attestation of product conformity with the basic and specific environmental requirements, with the objective to obtain the national environmental label (EVV).

List of effective NPEAPL directions

Product group	NPEAPL Direction Number	Effective
Biodegradable plastic packaging material	0013/2003	V/2003 – V/2006
Washing agents for textiles	0014/2003	V/2003 – V/2006
Hygiene tissue paper and its products	0022/2003	V/2003 – V/2006
Adsorbents	0024/2006	II/2006 – XII/2008
Radial tires for personal vehicles	0026/2006	II/2006- XII/2008

Source: SEA

• ENVIRONMENTAL MANAGEMENT AND AUDIT

Scheme of the European Community (EC) for **environmental management and audit (EMAS)** is a voluntary instrument of the EU that testifies to the fact that organizations base their environmental behaviour on consistent work.

Legal regulation of EMAS stems from the following documents:

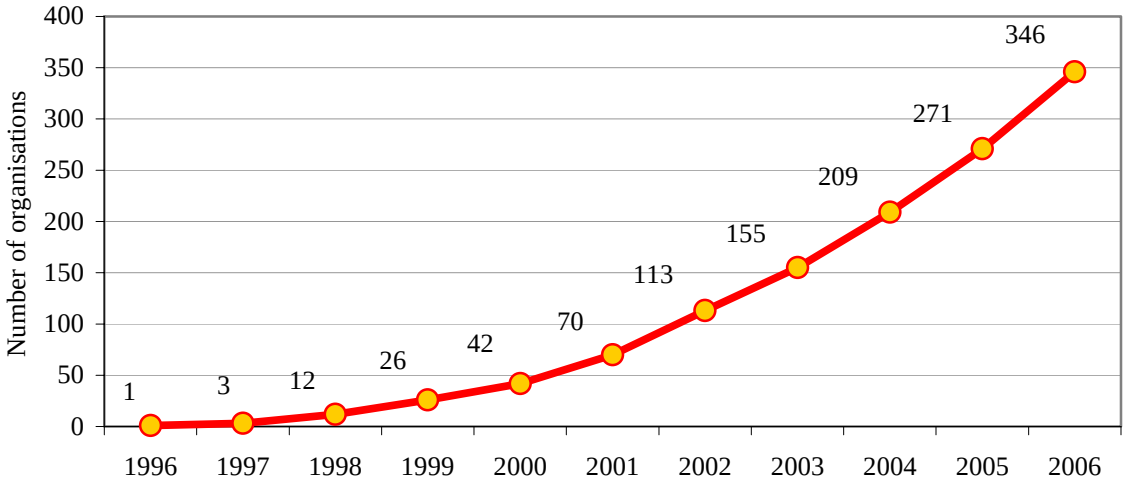
- European Parliament and Council Directive 761/2001 of March 19, 2001, which allows for voluntary involvement of organisations within the ES scheme for environmental management and audit (EMAS) in its application acts,
- Act No. 491/2005 Coll. on environmental inspection and registration within the European Community scheme for environmental management audit, and on amendment of certain laws,
- 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.

As of the end of 2006, 3 organisations in Slovakia met the conditions for registration within EMAS.

- **QUELLE Slovakia Ltd., Bratislava**
- **Messer Slovnaft Ltd., Bratislava**
- **Matador, Inc., Púchov**

Environmental management system (EMS) pursuant to STN EN ISO 14001 in Slovakia was in January 31, 2006 implemented in **346 organizations** whose functionality was certified.

Overview of the number of organisations with implemented EMS for the given year



Source: SEA

Building on the sector classification of economic activities, the greatest share of organisations with implemented EMS exists in the area of **construction** – 63. In terms of size categories of businesses, large businesses (more than 250 employees) represent 31.2 % of total number of organisations with implemented EMS, 38.7 % for middle size businesses (50-250 employees) and 30.1 % for small businesses (less than 50 employees).

Slovak Institute of Technical Normalisation; **Technical commission 72 – Environmental management** in the area of international norms of the ISO 14 000 series – „Environmental management“ with active participation of the Ministry of Environment representatives carries out a cooperation with the European normalisation organisations within the management and normalisation activities at all stages of their creation, as well as their adoption and maintenance within the scheme of the Slovak technical norms.

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 ENVIRONMENTAL 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 2006 (thous. SKK)

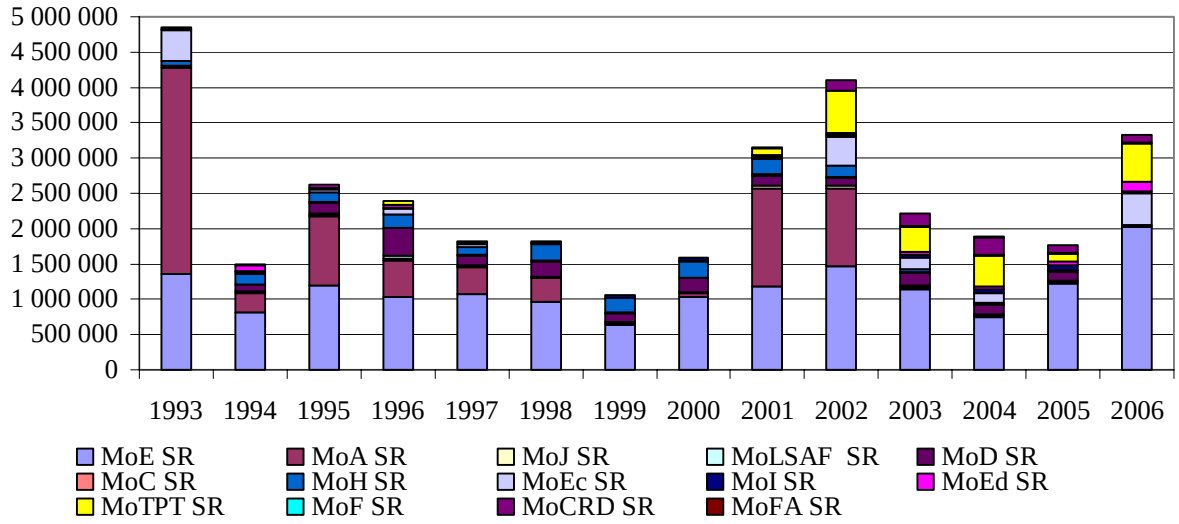
Department	WWTP Sewages	Other WM actions	Waste manage-ment	Air Protection	Others	Total	%
MoE SR	191 917	729 837	475 536	565 164	58 495	2 020 949	60,8
MoA SR	0	0	0	0	0	0	0
MoJ SR	7 514	0	100	0	0	7 614	0,2
MoLSAF SR	0	0	0	0	0	0	0
MoD SR	2 146	0	1 1112	6 882	17 405	27 546	0,8
MoC SR	160	0	0	0	1 492*	1 652	0,05
MoEc SR	216 041	0	0	0	228 302	444 343	13,4
MoI SR	2 781	0	0	17 592	2 215	22 588	0,7
MoEd SR	6 897	26 927	4 306	88 942	17 798	144 870	4,4
MoTPT SR	433 565	66 221	100	0	38 194	538 079	16,2
MoF SR	3 834	3 858	6 127	4 597	46	18 462	0,6
MoFA SR	0	0	0	0	0	0	0
MoCRD SR	65 512	34 886	0	0	0	100 399	3,0
Total	**930 367**	**861 729**	**497 281**	**683 177**	**363 947**	**6 663 003**	**100,00**

Source: Environmental fund, Proper resorts

During the period 1993-2006, Ministry of Environment SR designating the sum of 15.9 billion SKK to environmental investments, the Ministry of Agriculture designated the sum of 8.1 billion SKK, and the Ministry of Defence of the Slovak Republic designated the sum of 2.01 billion SKK.

Total environmental investments for the period 1993-2006 in Slovakia represent the sum of **34 billion SKK.**

Environmental investments of government departments of SR financed from the state budget in 1993-2006 (thous. SKK)



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 2006

Area of budget grants	Number	SKK
Protection of air and of ozone layer	12	12 500 000
Protection and rational efficiency of water	444	1 245 524 112
Development of waste management	86	137 008 000
Protection of nature and lands	18	24 100 000
Environmental education and promotion	22	31 460 000
Total	**591**	**1 469 763 846**

Source: Environmental fund

Economic tools

- **Fees for pollution and exploitation of natural resources**

In 2006, the greatest portion of fees for pollution of environment came from air pollution fees (1.178 bill. SKK).

Gains from selected economic tools exercised in 2006 (thous. SKK)

Sort of payment	2006
Charges for pollution of air	1 178 430
Retributions for tapping of waste water	325 224
Charges for loading of wastes	360
Charges EIA	240
Charges for exploitation of natural resources	
Retributions for taking of subterranean waters	347 710
Settlements for yielding spaces	9 082
Settlements for mined minerals	84 955
Settlements for loading of gases and liquids in natural rocky-structures and subterranean places	27 629

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 1993-2006 (thous. SKK)

Sector	1993	1998	1999	2000	2001	2002	2003	2004	2005	2006
Protection of air	9 693	3 771	2 334	1 644	2 220	6 176	1 847	4 328	6 016	3 545
Protection of water	12 635	7 850	6 733	6 038	8 887	5 858	8 030	9 540	10 603	14 832
Wastes	5 894	8 659	7 012	9 213	9 269	3 743	6 129	7 899	6 994	9 635
Protection of nature	662	1 893	1 659	1 498	1 581	3 532	1 255	1 421	1 607	2 703
Penalization			692	417	4 244	1 357	353	553	192	0
Building law				1 091	5 671	7 135	3 716	917	469	245
Packaging							5	2	1	310
Prevention of gross industrial averages							4	7	31	226
Trading with endangered species of animals and plants							43	73	81	160
Public water-supply and sewages									1	0
Integrated prevention and control									125	284
GMO									150	50
Geological works									5	0
Fishery										3
Total	**28 884**	**22 173**	**18 430**	**19 901**	**31 872**	**27 801**	**21 382**	**24 740**	**26 275**	**17 161**

Source: MoE SR

In 2006, the greatest sum of fines was imposed in the area of water protection (14.862 bill. SKK), in the area of waste management (9.635 mil. SKK).

Environmental gains and expenses

Financial indicators of environmental protection in Slovakia are systematically monitored by the Statistical Office of Slovak Republic for 1998-2006, 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 1998-2006 (thousand SKK)

Domain of gains and expenses	1998	2000	2001	2002	2003	2004	2005	2006
Investments on protection of environment covered from state sources	1 221 075	899 167	1 195 411	1 070 774	891 491	797 000	1 027 000	1 143 000
Investments on protection of environment covered from foreign sources	7 008 421	377 289	133 748	2 164 044	328 000[1)]	135 000[1)]	802 000[1)]	1 638 000[1)]
Current costs of protection of the environment	7 036 448	6 666 920	9 209 273	11 485 181	11 389 498	13 886 000	15 100 000	23 277 000
Intradepartmental disbursement– wage	434 349	508 619	612 137	842 778	877 277	912 000	1 068 000	1 111 000
Intradepartmental disbursement – other	3 188 770	3 083 225	4 892 388	5 579 150	5 290 254	4 849 000	5 373 000	13 460 000
Disbursement of organization on protection of the environment covered by other subject Charges and payments to public organs and organizations	2 464 240	2 253 695	2 653 205	2 919 064	2 991 248	1 492 000	4 345 000	4 033 000
Payments to private person or organizations	949 089	821 381	1 051 543	2 144 189	2 230 719	6 631 000	4 314 000	4 673 000
Profits from the protection of the environment Sales from selling of products, tools and components	610 971	641 788	659 868	709 743	106 022	111 000	52 000	65 000
Sales from selling of technologies	509	1 882	16 116	1 100	30	0	0	13 000
Sales from provided services	328 985	307 421	477 601	1 056 806	1 497 401	4 497 000	5 613 000	4 506 000

[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 2006, 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.

◆ Grants

The **"Green Project"** grant 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. 12 projects were funded with total amount of 603 000 SKK.

Environmental edification

In 2006, 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 2006 included for example:

- **Presentations and exhibitions**

- Enviro Nitra
- Ekotechnika - Hydrotec Bratislava
- For Arch – For Region - R.I.S. Banská Bystrica
- AQUA Trenčín
- Kamenár Trenčín ("stonecutter“) Trenčín.

- **Conferences, seminars, lectures, training sessions**

In 2006, MoE SR in cooperation with professional organisations within the sector organised a number of events for professionals and general public alike:

- Waste recycling
- 11. professional seminar for workers of accessed caves
- World Water Day – Water and Culture - XI. annual international conference
- II. International workshop on ice caves
- Hydrochémia 2006 – New analytical methods in water chemistry
- From the history of mining at Vyhne
- Toward the integrated watershed management
- Environmental policy and industrial development of the SR
- Protection of nature’s monuments in the Slovak border region with Poland – West Beskydy, and development of the NATURA 2000 network
- Drinking water supply in emergency and critical situations
- Enviro-i-forum
- Research, exploitation, and protection of caves
- Modern trends and challenges in mineral research
- 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 2006
- International Danube Day 2006
- 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
- Promotion of education for TUR in Vojvodina.

- **Publication activity**

Major periodicals published in the sector of environment in 2006 included the MoE SR Journal, Enviromagazín magazines, Mineralia Slovaca, Slovak 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.

Access to Environmental Information

To comply with **Act 211/2000 Coll. on free access to information and amendment to other laws,** MŽP SR is the contact point for the general public as well as professionals, through its Public Office. The Office not only informs the public on environmental issues, but also closely cooperates with the professional industrial sector, schools, and institutes of the Slovak Academy of Sciences.

In 2006, on free access to information and amendment to certain laws, registered 5 144 applications. Greatest number of registered applications submitted by the public came through the „Green Line“. Direct telephonic conversation were registered through 3 910 applications, 55 applications were sent in by mail and subsequently registered, 1 052 proposals were e-mailed, and 3 proposals were faxed. 124 personal inquires have been processed directly by the public office.

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

European Union

Coordination of the SR strategy toward the EU in the area of environment is supervised by the MoE SR. **Ministerial coordination group for environment** oversees the first stage of coordination. Besides the regular 19 meetings of Ministerial coordination group for environment, there were also organized informal meetings to address specific problem categories or operative problems, between individual Ministerial coordination group for environment meetings.

The highest decision making authority to adopt legal steps and political documents at the EU level for environmental issues is the EU Environment Council, with the Slovak Minister of Environment as a member.

There are 2 taskforce groups working within EU Environment Council (Taskforce group for environment – with its focus on internal environmental policies, and a taskforce group for international aspects of environment – with its focus on external environmental policies and coordination of the member states' positions before deliberation on international agreements in the area of environment.) Representatives from the sector of environment, together with invited specialists from other sectors, regularly attended the sessions of the EU Council working groups.

Drawing on the experiences of the "old" EU member states, MoE SR organized a regular meeting of the representatives of all member states' Embassies with the Minister of environment, before the EU Environment Council formal talks.

Interests of Slovakia were promoted thanks to the participation of the Ministry's representatives in individual EU Council environmental formations, especially in the Environmental Ministerial Council.

The following **legal acts** were adopted in the EU for the monitored time period: 13 resolutions, 14 directives, 13 decisions, and 1 recommendation.

In 2006 continued the process of transposition and implementation of the effective EU legal acts in the area of environment.

MoE SR complies with the provisions of Act 379/2004 on cooperation between the SR Council and Government on the EU issues. The Ministry also keeps the stated deadlines, thus contributing to a more effective promotion of Slovakia's interests in EU.

Visegrad Cooperation (V4)

On May 4-5, 2006, MoE SR organized the 13th meeting of ministers of environment of the V4 countries. Major topics included the EU policy for prevention and recycling of waste, experiences from the V4 countries with funding the NATURA 2000 network, and exchange of opinions on the advantages of using harmonized geographical information.

The ministers agreed on a future cooperation and coordination of common positions toward the EU Directive on waste. Further, they agreed to include a clear and transparent definition of reclamation, energy exploitation, landfill disposal, as well as set criteria classifying the waste as a raw material.

The ministers agreed that disbursement of adequate EU funds to fund the NATURA 2000 network for the period of 2007-2013 is fundamental to the implementation of directives on birds and habitats. The ministers further supported the ambitious INSPIRE initiative (Infrastructure for spatial information in the European Community).

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.

Equally intensive were activities of mixed committees and taskforce groups for cooperation with the mentioned countries in the area of border waters.

Multiteral cooperation

In 2006, initiatives of Slovakia to become a valid member of **European Organisation for the Exploitation of Meteorological Satellites** (EUMETSAT) were completed. Protocol of the financial

matters relating to Slovakia's accession to the Convention on establishment of the European organization for the exploitation of meteorological satellites was signed. This Protocol formed the starting point for the valid membership of Slovakia in the organisation, followed by two agreements:

- Convention for the establishment of a European Organisation for the Exploitation of Meteorological Satellites (EUMETSAT) (Geneva, May 24, 1983, document on the accession of Slovakia stored on January 3, 2006)
- **Protocol on the privileges and immunities of the European Organisation for the Exploitation of Meteorological Satellites (EUMETSAT)** (Darmstadt, June 5, 1986, document on the accession of Slovakia stored on January 24, 2006)

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 2003 National Programme** are realised in 2004-2006. Three (3) twinning projects were approved for the resort of environment.

Projects implemented under financial memorandum of the PHARE 2003 National Programme

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 COMPLETED - JUNE 2006
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
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 COMPLETED - 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 COMPLETED - 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 COMPLETED - 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" Transition Facility 2004

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 COMPLETED - 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	Dekonta, Ltd. in cooperation with the Slovak Hydro-meteorological Institute
Total financial volume	199 000 EUR
State of project	PROJECT UNDER IMPLEMENTATION, PLANNED COMPLETION - NOVEMBER 2007

Source: MoE SR

Life III – financial instrument for environment

The LIFE Programme focuses on development and implementation of the strategy for the EU environmental protection. Its main objective is to help integrate the environmental aspect into the social area. Activities were funded in three basic areas: LIFE – Nature, LIFE – Environment, LIFE – Third countries.

In the years 2000-2004, the third phase of the LIFE III programme was implemented, with 640 mill. EUR allocated by the EC, including 47 % to LIFE – Nature, 47 % to LIFE- Environment, and 6 % to LIFE – Third countries.

Considering the two-year period between the old and the new EU funding perspectives (2007-2013), EC decided to extend the third LIFE programme phase with two programming years, i.e. until 2006. In 2005, Slovak applicants submitted three project proposals for the LIFE – Nature part, while on the other three projects they cooperated with international partners. EC approved two Slovak projects and one Hungarian project with total sum of 3 346 393 EUR. For the LIFE – Environment component, Slovakia sent in 4 projects; however, none of them was approved.

Summary of approved and ongoing projects under the LIFE EC Programme in 2006

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:	1 500 000 EUR
Grant LIFE:	319 961 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

Protected bird territories (CHVÚ) in Slovakia and their protection	
Project submitted by:	State Nature Protection of SR, Administration of PLA (Protected landscape area) Latorica
Project partners:	Slovak Ornithological Society, BirdLife Slovakia, Zemplín Museum, Michalovce, the villages of Senné, Iďačovce, Blatná Polianka, and Hažín, Association of Hunters Ostrovík, Senné
Project's budget:	1 325 556 EUR
Grant LIFE:	662 778 EUR
Phase	under implementation

Renewal and management of habitats of sand dunes in the territory of the Military training zone Záhorie	
Project submitted by:	Military technical and testing institute in Záhorie
Project partners:	State Nature Protection of the Slovak Republic (SNC SR), PLA Administration Záhorie, Bratislava Regional protection association
Project's budget:	1 538 438 EUR
Grant LIFE:	1 076 900 EUR
Phase	under implementation

Protection of *Falco cherrug* in the Carpathian basin	
Project submitted by:	Administration of the Bükk National Park, Hungary
Project partners:	Administration authorities of the Hungarian national parks of Aggtelek, Balaton, Duna-Dráva, Duna-Ipoly, Fertõ-Hanság, Hortobágy, Körös-Maros, Kiskunság, Örség, MME/BirdLife Hungary, E-misszió environmental association (Hungary), PRO VÉRTES foundation for nature protection (Hungary), SNC SR, Protection of bird of prey of Slovakia, Slovak ornithological society / BirdLife Slovakia, Západoslovenská energetika, Inc.
Project's budget:	2 152 042 EUR
Grant LIFE:	1 606 715 EUR
Phase	under implementation

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

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, Ltd., 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.

In its meeting on April 12, 2006, the SR Government approved the **National Programme of Official Development Assistance for the year 2006**.

Funds in 2006 were primarily focused on projects in the following seven countries: Serbia and Montenegro, Kenya, Sudan, Kirghizia, Kazakhstan, Ukraine, and Belarus.

In 2006, the State budget allocated 160 711 thous. SKK to the Programme of development assistance, implemented by the Ministry of Foreign Affairs in the SR. Anticipated funds were used to ensure implementation of the following projects:

- Projects for Serbia and Montenegro 50 000 thous. SKK
- Projects for Kenya and Sudan 30 000 thous. SKK
- Projects for Kirghizia and Kazakhstan 25 000 thous. SKK
- Projects for Ukraine and Belarus 10 000 thous. SKK
- Projects in other countries (Afghanistan, Bosnia and Herzegovina, Cambodia, Mongolia, Mozambique, Senegal) 40 000 thous. SKK
- Projects of development education and public awareness 5 711 thous. SKK.

The annually published ODA report by the Ministry of Foreign Affairs suggests that the volume of provided assistance in 2006 reached 1.638 bill. SKK, which is an 0.103 % share on the GNP generated in Slovakia in 2006.

Summary of approved projects in 2006 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:	3.41 mil SKK
ODA contribution:	3.1 mil SKK
Phase:	Project completed – December 2006

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:	3.3 mil SKK
ODA contribution:	3.0 mil SKK
Phase:	Project completed - July 2006

Support of education toward sustainable development in Vojvodina	
Project submitted by:	Slovak Environmental Agency
Project's budget:	1.99 mil SKK
ODA contribution:	1.98 mil SKK
Phase:	under implementation

Source: MoE SR

Integrated management of selected river watersheds in compliance with the European Water Framework Directive	
Project submitted by:	Water Management Research Institute
Project partners:	1. Vojvodina Academy of Science and Art, Novi Sad 2. Ministry for Science and Environment Protection in Serbia – MSEP 3. Faculty of technical Sciences 4. University of Novi Sad 5. JVP „VODE VOJVODINE" – Novi Sad - JVP
Project's budget:	5.18 mil. SKK
ODA contribution:	3.45 mil. SKK
Phase:	under implementation

GEF – Global Environmental Facility

GEF projects are managed through GEF implementation agencies, including the United Nations Environment Programme – **UNEP,** United Nations Development Programme – **UNDP,** and **World Bank**.

In the period from July 1, 2006 to June 30, 2010, a new programming period will start for the Global Environment Facility initiative (GEF 4), with the priority areas narrowed down to **climate changes and biodiversity**.

For the BIODIVERSITY area, Slovakia was placed in a group of 93 countries with an average allocation per country at 3.5 mil. USD by 2010. Slovakia submitted for funding its **project: „Integration of principles and practices of ecological management into landscape and water management in the East Slovakia Lowland (Laborec-Uh)"**, already approved by the GEF Council in 2006. The project was not funded only due to the lack of funds in the previous GEF 3 programming period.

For the area of CLILMATE CHANGES, Slovakia was given an allocation of 5.7 mil. USD by 2010. Slovakia wants to use the allocated funding to fund projects in the area of transportation and renewable energy resources.

In 2006, there were 9 projects implemented (or prepared for implementation) in the area of environmental protection in Slovakia.

EHP financial mechanism and Norwegian financial mechanism

First financial mechanism includes *multilateral EHP contribution,* designated for the development of less developed regions in all EU member states. This financial instrument is to provide grants for investment projects in the following priority sectors:

- protection of environment, including the protection of living conditions, through reducing pollution and support in the area of renewable energies
- support of sustainable development through improved use and management of sources, etc.

The second instrument includes *financial instrument of Norway,* with the objective to contribute to the consolidation of capacities of the acceding countries to become fully active within the internal EHP market, through grant funding for investment projects in those sectors that receive support also from FM EHP.

Within the EHP financial instrument, there is 600 million EUR allocated for **all 10 acceding countries and three so-called EU cohesion countries** – Spain, Portugal, and Greece, for the period from May 1, 2004 to April 30, 2009. This includes 120 mill. EUR allocated for one year. Of the total volume, 5.39 % has been allocated for Slovakia, which, calculated to the entire period, represents 32.34 mill. EUR.

Financial instrument of Norway, designated only for the acceding countries, is for the period of May 1, 2004 to April 30, 2009 in the sum of **567 million EUR,** including 113.4 mill. EUR allocated for one year. Anticipated share of Slovakia on total volume is 37.99 mill. EUR for the whole time period, which is 6.7 %.

Amount of the non-repayable financial contribution per project depends on the type of assistance receiver. In case the **project is funded from public sources** (central, regional, local), the **maximum amount of grant is 85 % of total project costs. For the other projects** that are not funded from public sources, the **maximum amount of contribution is 60 % of total costs.**

Programming cycle

I. programming cycle took place toward the end of 2005 and the beginning of 2006 – MoE SR submitted to the National contact point 9 project proposals; before the end of 2006, MoE SR did not receive any information on their progress.

Summary of other projects of international aid

SCHEME/DONOR:	2003	2004	2005	2006	Beneficiary/ co-author	Note:
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
Optimising of the geological depository for the CASTOR strategy of CO2 reduction			0.5 (0.013 M€)		SGI DŠ GEUS Denmark	Implementation: January 2005 – February 2006
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				***5.39 (0.14 M€)***		
Bilateral aid						
Belgium – Flanders						
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				***2.59 (0.065 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
Denmark – subtotal				***23.7 (0.59 M€)***		
Holland						
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 2006

SCHEME/DONOR:	2003	2004	2005	2006	Beneficiary/ co-author	Note:
Optimising and improving the effectiveness of the national monitoring system of ground water quality				N	MoE SR, SHMI, SGIDŠ,WGI , Water sources of the SR, Holland	Supplementary project: MAT03/SK/9/3 Assessment of ground water under the Framework Directive on water 2000/60/ES
MTEC– training courses						
ISPA / KF environment	N	N	N		MoE SR	3+4+3 +0participants
How to act in Brussels		N	N	N	SEA, MoE SR	0+1+1+1 participant
Communication with the public			N		MoE SR	0+0+1+0 participant
Structural funds			N	N	MoE SR	0+0+1+2 participant
Flood management				N	MoE SR	0+0+0+1 participant
Holland – subtotal				***13.26 (0.34 M€)***		
Germany						
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				***1.14 (0.03 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€)***	
Great Britain (GB)						
Environmental education made available for the handicapped		0.97 (0.02 M€)			SEA Field Studies Council, GB	Multilateral project GB, SR, Italy, Latvia, Bulgaria, and Poland
Great Britain – total				***0.97 (0.024M€)***		
Bilateral programmes – total				***131.75 (3.29M€)***		

I. Other programmes and funds						
Knowledge from nature – Grundtvig 2				0.56 (0.015 M€)	SMOPaJ Bulgaria, Italy, Czech Republic, Romania	Source operator: SOCRATES National office
RENASCENT Recycling network to help small and medium size businesses				0.34 (0.009 M€)	SEA Austria and 14 partners from 3 countries	Source operator: Austrian Ministry of Economy
Healthcare waste handling management policies in Macedonia – healthcare waste				1.13 (0.03 M€)	SEA Ministry of Environment, Macedonia	Source operator: The Basil Convention Trust Fund
Research and establishment of a management system for the area of lubricating oils in Bosnia and Herzegovina			0.75 (0.02 M€)		SEA Ministry of Environment of Bosnia and Herzegovina	UNEP - Mediterranean Action Plan
Flood protection				0.56 (0.015 M€)	WRI Czech Republic, Poland, Hungary	Source operator: International Visegrad Fund + MŽP SR
ALMA MATER – Banská Štiavnica. European significance of the Academy of Mining and Forestry				0.3 M€)	SBM B. Štiavnica Czech Republic, Poland, Hungary	Source operator: International Visegrad Fund + MŽP SR completed in 2006
Workshop on environmentally-friendly handling of waste oils				1.13 (0.03 M€)	SEA	Source operator: Technical Assistance Information Exchange Office (TAIEX)
Workshop for customs officers, border patrols, inspectors, and police -illegal transit of waste				3.0 (0.08 M€)	SEA	Source operator: Technical Assistance Information Exchange Office (TAIEX)
Workshop – implementation of the Basil Protocol on damages			3.0 (0.08M€)		SEA	Source operator: TAIEX and the Polish Government completed in January 2006
Border area promotion programme in the area of environment			0.6 (0.016M€)		SEA Užhorod National University	Source of funding: PHARE Initiative for external border
Other programmes and funds – total				***11.37 (0,30M€)***		
TOTAL VOLUME OF INTERNATIONAL ASSISTANCE						***148.51 (3.73M€)***

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

ADI	Acceptable Daily Income
AL	Arable Land
AOT40	Accumulated Dose Over a Threshold of 40 ppb
BOD	Biochemical Oxygen Demand
CCHSP	Centre for Chemical Substances and Products
CCTIA	Central Controling and Testing Institute in Agriculture
CITES	Convention on International Trade in Endangered Species of Wild Flora and Fauna
CM	Cultural Monument
COD	Chemical Oxygen Demand
COD_{Cr}	Chemical Oxygen Demand by Dichromade
COD_{Mn}	Chemical Oxygen Demand by Permanganate
Coll.	Collection of Laws
CPM	Co-ordinated Purpose-oriented Monitoring
CR	Critically Endangered Taxon
ČSFR	Czechoslovak Federative Republic
dB	Decibel
DD	Data Deficient Taxon
D.U.	Dobson units
EC	European Commission, European Community
Ed	Endemic Taxon
EEA	European Environmental Agency
EEC	European Economic Community
EFP	Environment-friendly Product
EIA	Environmental Impact Assessment
ELC	European Landscape Convention
EMAS	Eco-Management and Audit Scheme
EMEP	European Monitoring and Evaluation Programme
EMS	Environmental Management System
EN	Endangered Taxon
ENP_{UV}	Extracting Non-polar Substances
EU	European Union
EUROSTAT	Statistical Office of the European Communities
EX	Extinct Taxon
FAO	Food and Agriculture Organisation of the United Nations
FDI	Foreign Direct Investments
FoRI	Food Research Institute
GDP	Gross Domestic Product
Gg	Greenhouse Gases, Giga Grams of CO_2
GMO	Genetically Modified Organisms
GS SR	Geological Survey of the Slovak Republic
GWh	Giga Watt hour
ha	Hectare
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
Inc.	Incorporated
INES	International Nuclear Event Scale
IPCC	Intergovernmental Panel of Climate Change
IPPC	Integrated Prevention and Pollution Control

IS	Insoluble Substances
ISO	International Organization for Standardization
IUCN	The International Union for the Conservation of Nature and Natural Resources
kt	Kilotonnes
KURS 2001	The Conception of Spatial Development of Slovakia 2001
LA	Loaded Area
LR	Lower Risk Taxon
Ltd.	Limited corporation
MB SR	The Monuments Board of the Slovak Republic
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
MW	Municipal Waste, MegaWatt
NATO	North Atlantic Treaty Organisation
NC SR	National Council of the Slovak Republic
NCM	National Cultural Monument
NE	Not Evaluated Taxon
NEHAP III	National Environmental and Health Action Plan for the Slovak Republic III
NEIS	National Emission Inventory System
NEL	Non -polar Extractable Substances
NFC	National Forest Centre
NM	Nature Monument
NM VOC	Non-Methane Volatile Organic Compounds
NNM	National Nature Monument
NNR	National Nature Reserve
No.	Number
NP	National Park
NPP	Nuclear Power Plants
NR	Nature Reserve
NRA SR	Nuclear Regulatory Authority of the SR
NUTS	Nomenclature of Units for Territorial Statistics
OECD	Organisation for Economic Co-operation and Development
PA	Protected Area
PAH	Polyaromatic Hydrocarbons
PCB	Polychloride Biphenyl
pcs	Pieces
PES	Primary Energy Sources
PG	Permanent Grassland
pH	Acidity in pH
PJ	Peta Joule (10^{15} J)
PLA	Protected Landscape Area
PLF	Protected Landscape Fragment
PM_{10}	Particulate Matter between 2.5 and 10 micrometers in size

PMS	Partial Monitoring System
PMS-S	Partial Monitoring System - Soil
PMS- F	Partial Monitoring System - Forests
POPs	Persistent Organic Pollutants
ppb	Parts per Billion
PPP	Purchase Power Parity
PS	Protected Site
pSCI	Proposed Sites of Community Importance
pSPA	Proposed Special Protected Area
PZ	Protective Zone
REACH	European Community Regulation on Chemicals and their Safe Use (EC 1907/2006) (**R**egistration, **E**valuation, **A**uthorisation and Restriction of **Ch**emical substance)
RIAP	Research Institute for Animal Production
RIPP	Research Institute of Plant Production
SCI	Sites of Community Importance
SEA	Slovak Environmental Agency, Strategic Impact Assessment
SEI	Slovak Environmental Ispection
SGI DS	State Geological Institute of Dionýz Štúr
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
SPA	Special Protected Area
SR	Slovak Republic
SSCRI	Soil Science and Conservation Research Institute
SSPA	Small-size Protected Areas
STN	Slovak Technical Standard
TANAP	Tatras National Park
Tg	Tera grams of CO_2
TJ	Tera Joule
TWh	Tera Watt Hour
UN	United Nations
UNECE	UN Economic Commission for Europe
UNEP	United Nations Environment Programme
UNESCO-MaB	The United Nations Educational, Scientific and Cultural Organization – Man and the Biosphere
V4	Visegrad group (4 Central European contries: Czech Rep., Slovakia, Hungary, Poland)
VaK	State Enterprises Water and Sewage Works
VOC	Volatile Organic Compounds
VRP	Village Renewal Program
VU	Vulnerable Taxon
WH	World Heritage
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