MINISTRY OF THE ENVIRONMENT OF THE SLOVAK REPUBLIC

STATE OF THE ENVIRONMENT REPORT

SLOVAK REPUBLIC 2006

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.***

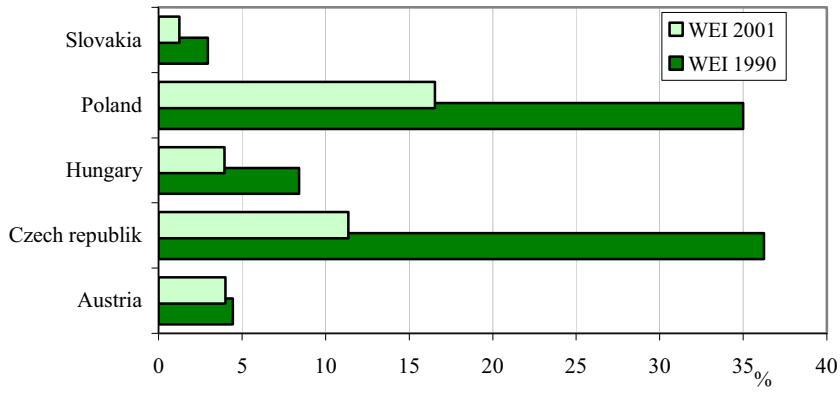
§ 30 par. 1 of the Act No. 364/2004 Coll. on Waters and on Amendment of Act No. 372/1990 Coll. on Offences as amended (Waters Act)

• 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

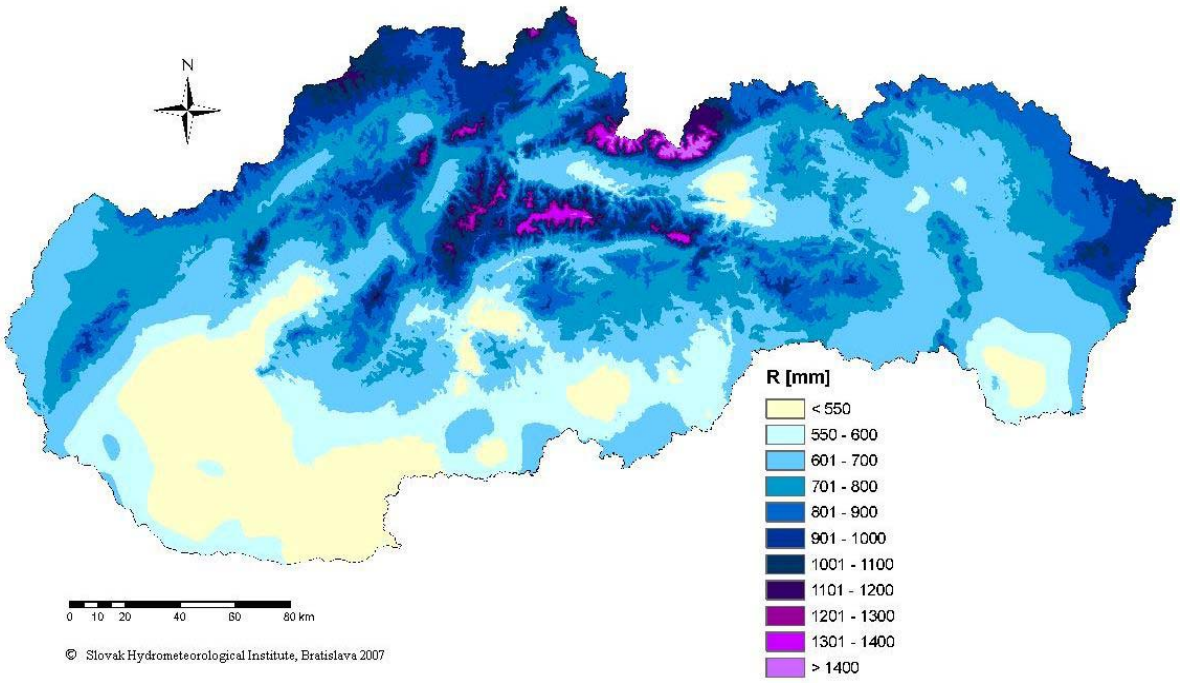
Catchment area	Dunaj		Váh		Hron			Bodrog a Hornád				SR
Subcatchment area	*Morava	*Dunaj	Váh	Nitra	Hron	*Ipeľ	Slaná	Bodva	Hornád	*Bodrog	*Poprad and Dunajec	
Catchment area extent (km^2)	2 282	1 138	14 268	4 501	5 465	3 649	3 217	858	4 414	7 272	1 950	49 014
Average precipitation (mm)	731	574	802	660	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

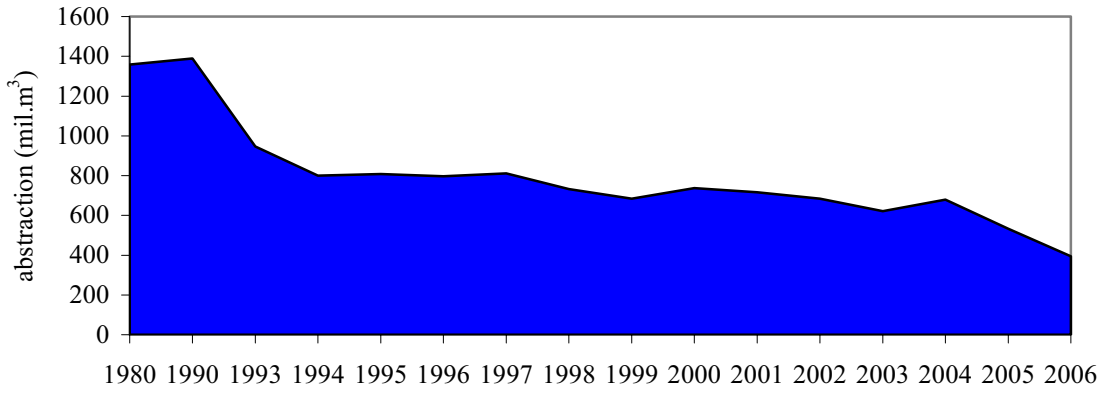
* Note: Data in the table were updated with results from the 2004 assessment Source: SHMI

♦ 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.

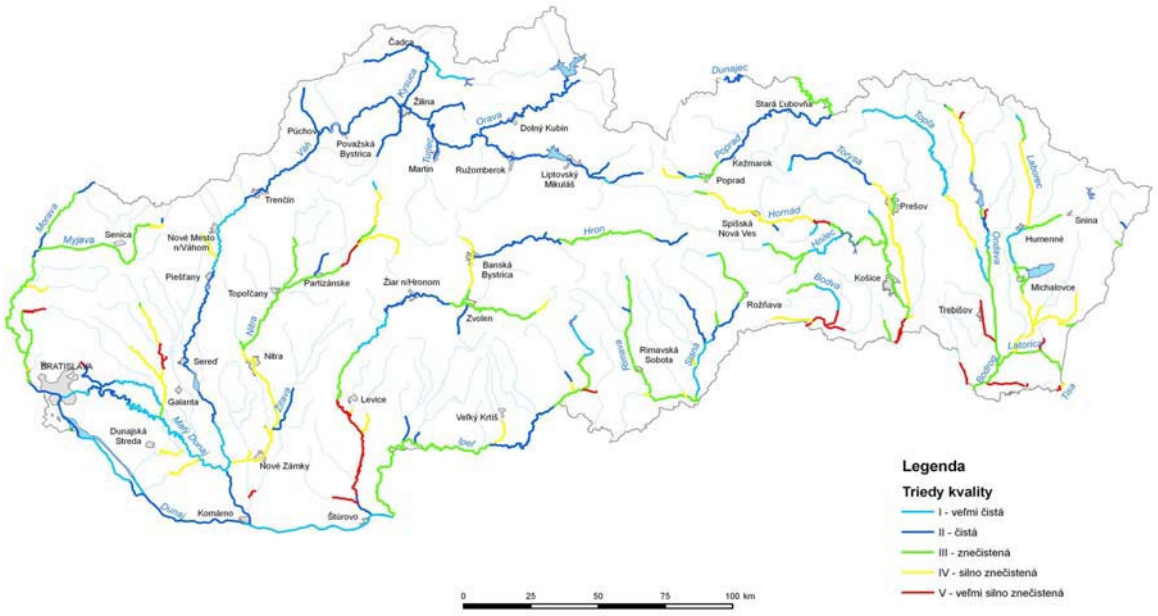
In the years 2005-2006, more than 71 % of the category **A - oxygen demand** (224 abstraction sites) complied with the conditions of the quality groups I, II, and III. Indicator groups **B - basic physical-chemical** (224 abstraction sites), **C – nutrients** (224 abstraction sites), and **D – biological 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.

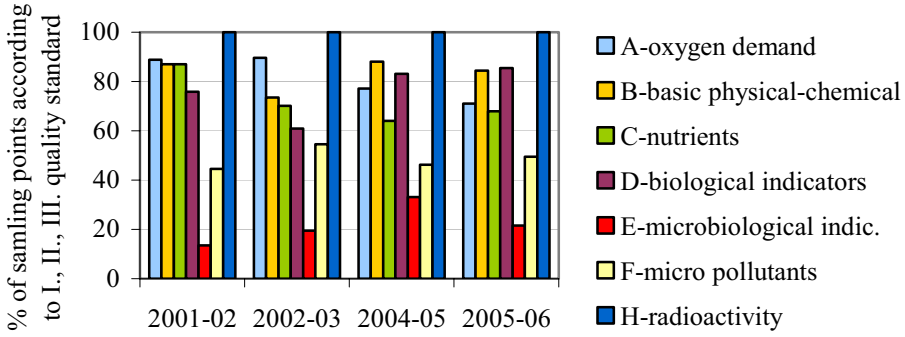
Surface water quality categories in the group A – oxygen demand in years 2005-2006



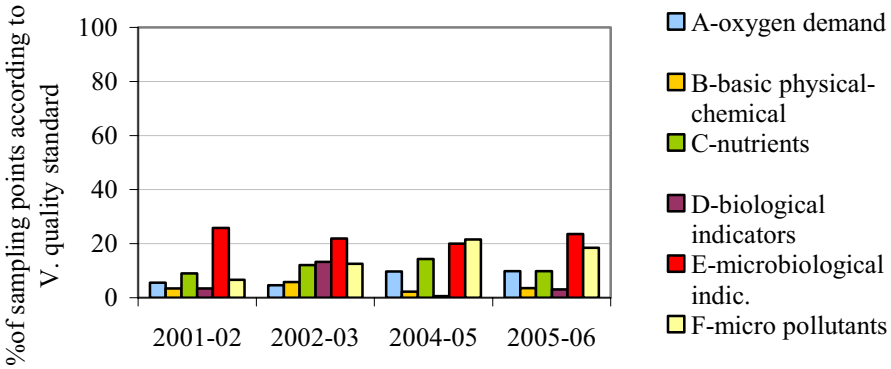
Source: SHMI

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

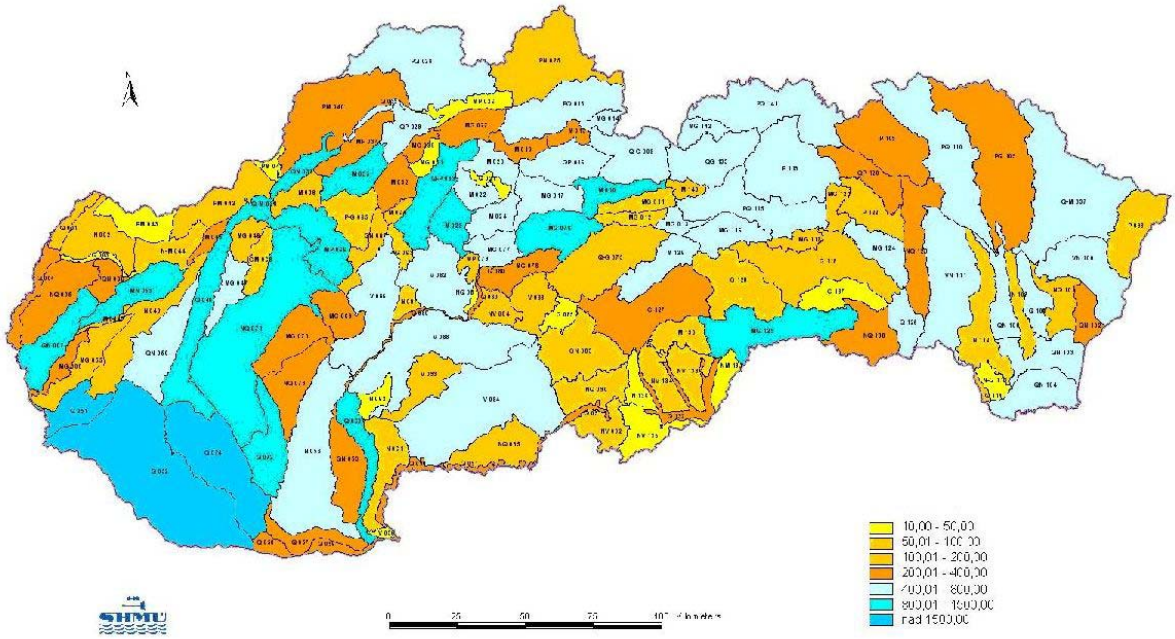
Ground water

♦ 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.

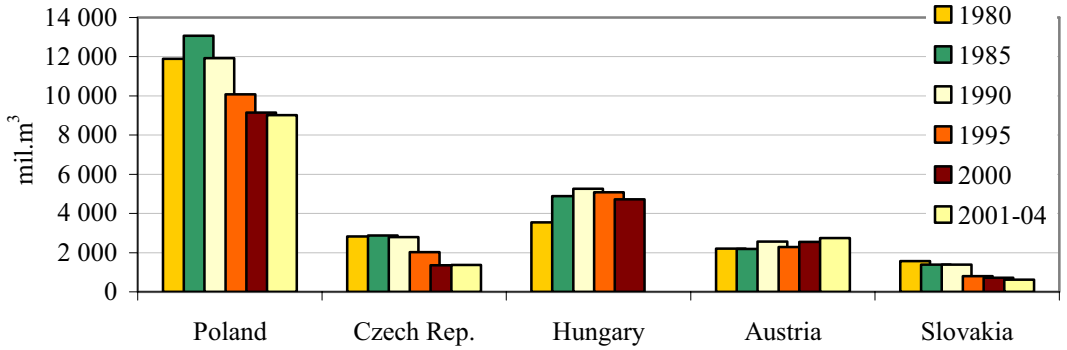
Groundwater extraction in 2006 according to the purpose of use

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

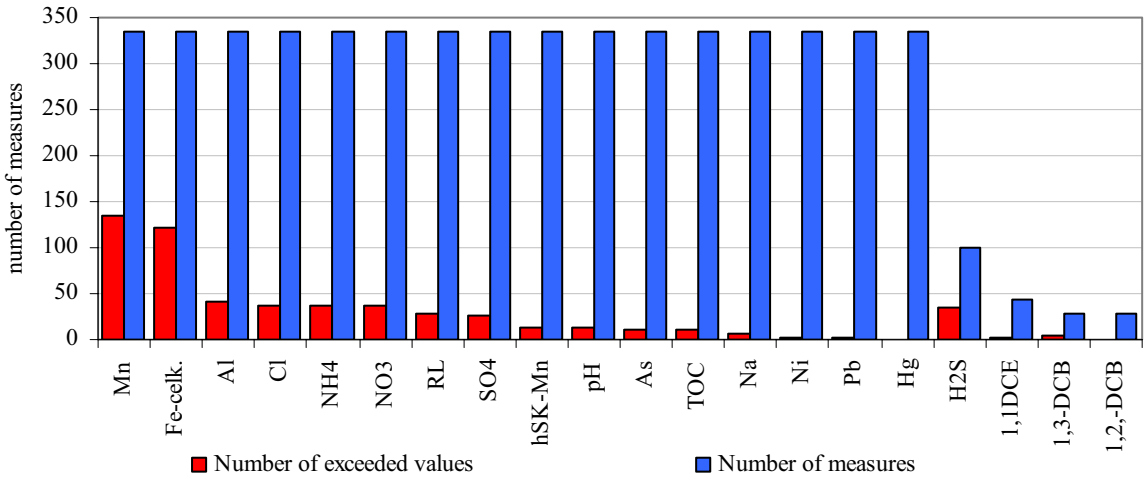
- **Groundwater quality**

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.

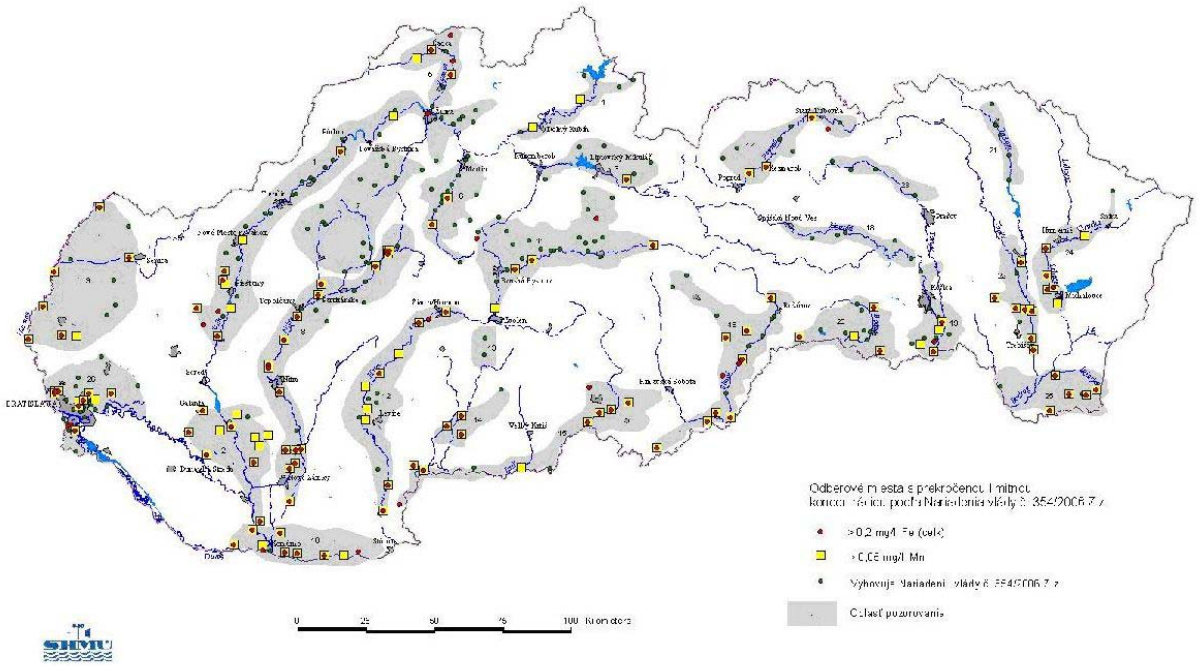
Just like in the previous years, contamination by **organic substances,** indicated by exceeded acceptable COD_{Mn} concentration, is still present. Since in 2006, non-polar extractable substances were determined as the hydro-carbon index, we did not record any exceeding values for this indicator at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

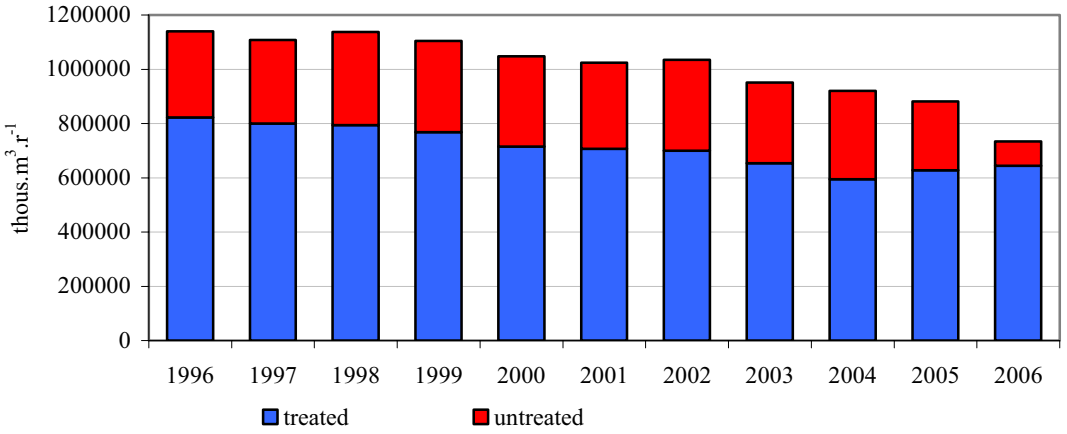
Percentage of discharged treated waste water to **total volumes of waste water** discharged into watercourses in 2006 was 87.9 %.

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

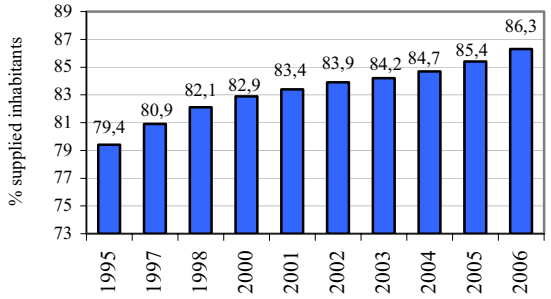
region (91.7 %), Bratislava region (97.3 %), and Žilina region (98.7 %). However, compared to 2005, Banská Bystrica, Prešov, and Košice regions showed unchanged number of municipalities with public water supply.

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}).

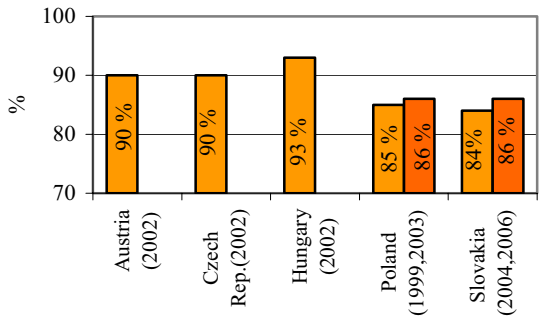
Also other countries showed a decreasing trend in the annual water consumption from public water supplies per capita. Czech Republic and Slovakia are approximately at the same level in terms of water consumption, while Poland shows the least consumption – only 57 m^3.inhab^{-1}.year, Hungary shows the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

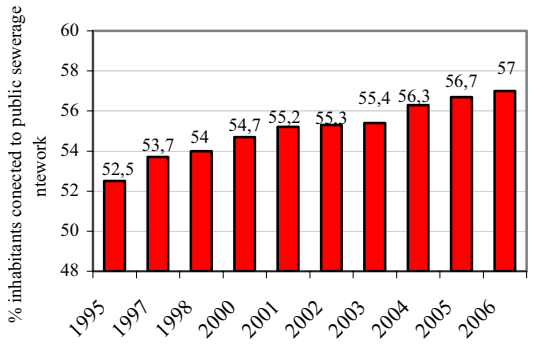
♦ **Sewerage system**

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.

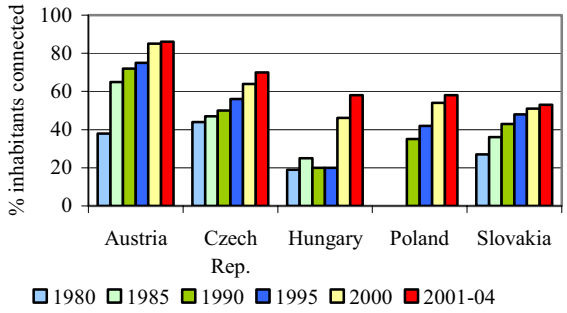
Greatest level of connectedness of the public to the public sewerage system from among the V4 countries reached Austria (86 %), and the Czech Republic (70 %), Poland, Hungary, and Slovakia show approximately the same level of connectedness, 56 % on average.

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.

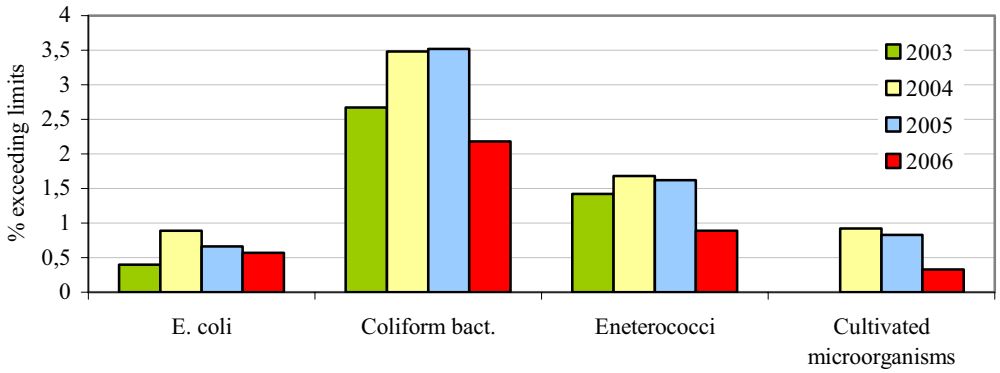
Exceeding limits in drinking water samples in accordance with the Regulation MoH SR No. 151/2004 Coll. on demands on drinking water and drinking water control

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

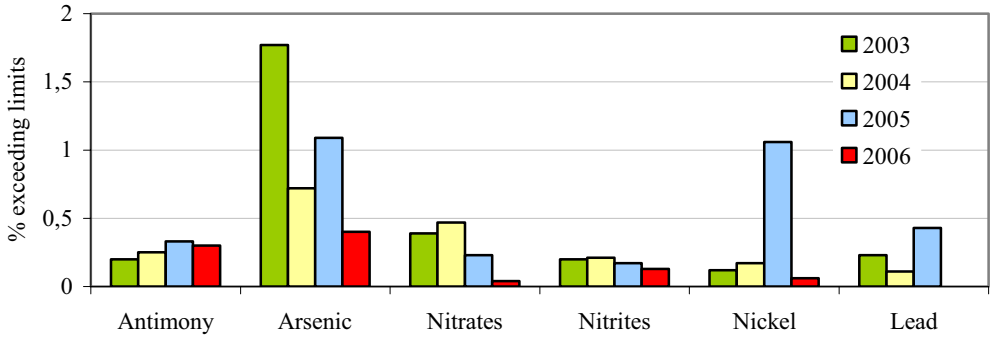
IH – indicative values, MH - threshold values, NMH - maximum threshold values, MHRR – threshold values of the reference risk

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



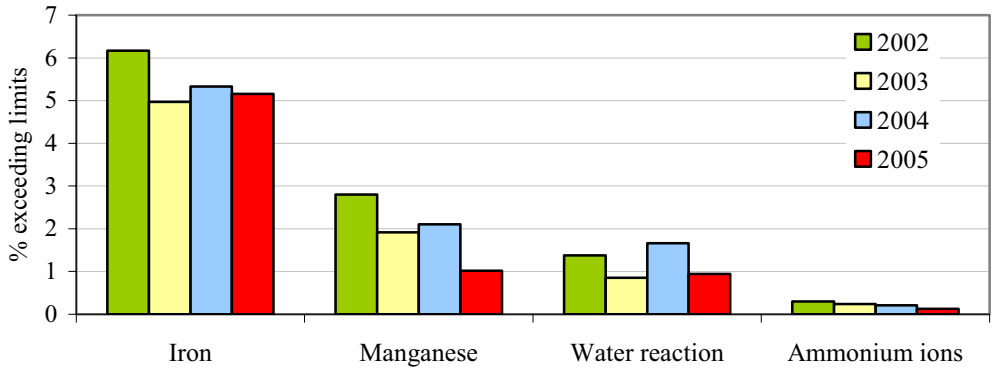
Source: WRI

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



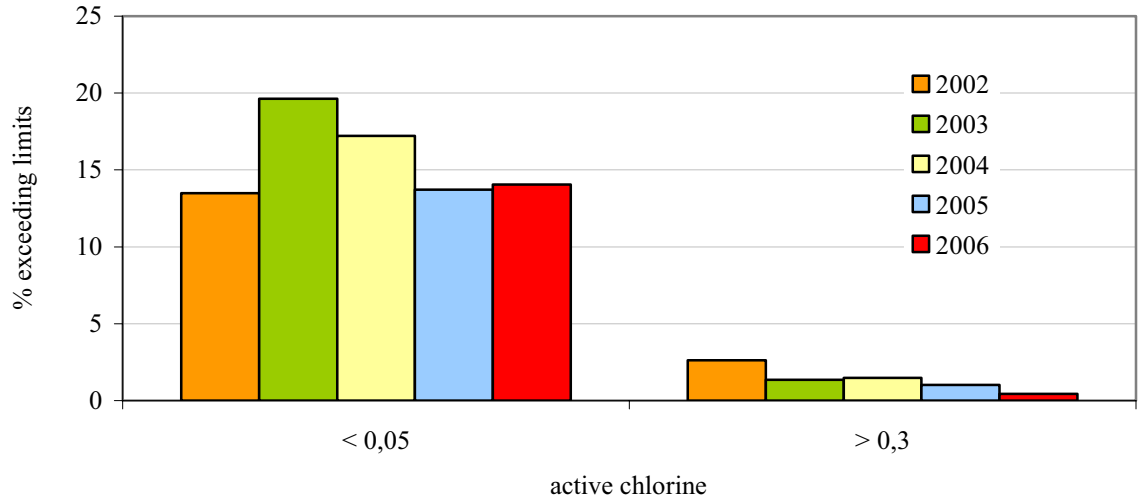
Source: WRI

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



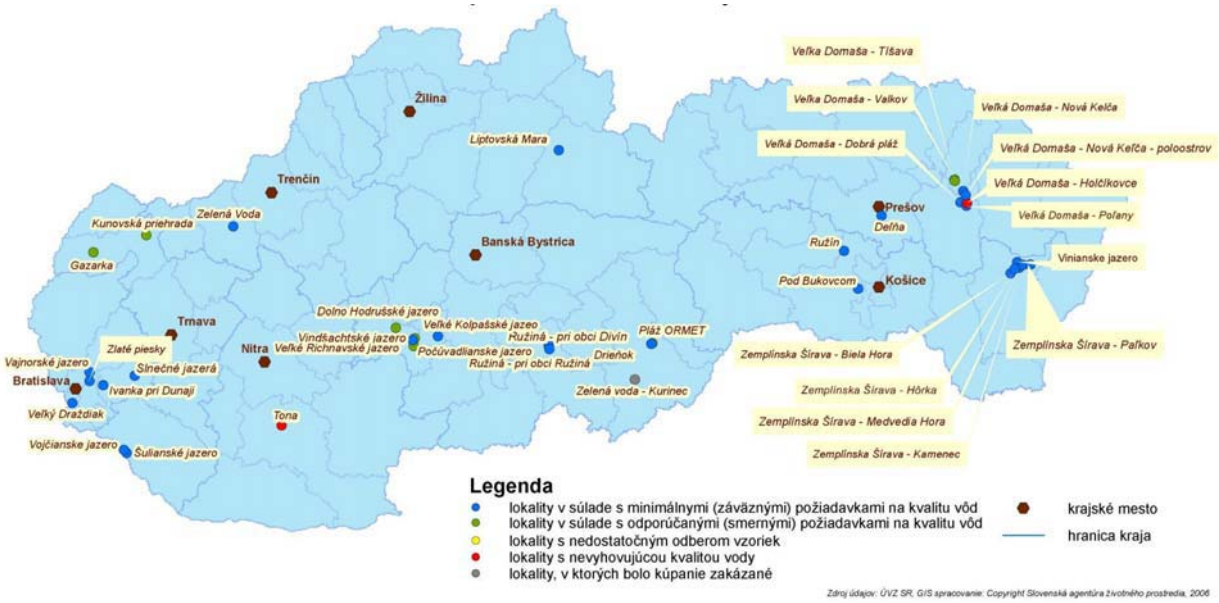
Source: WRI

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 %.