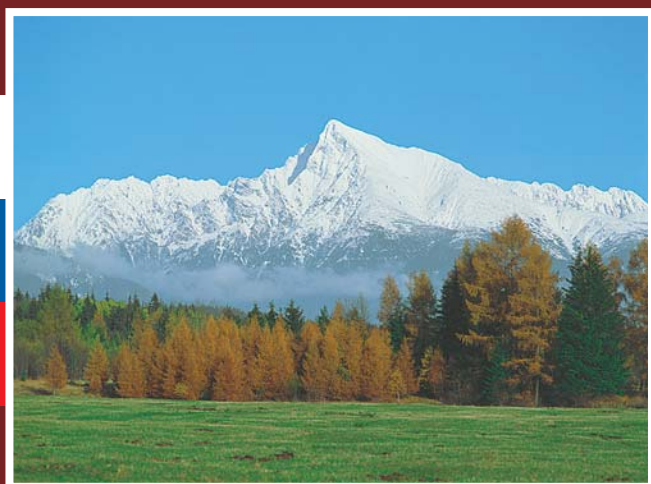


***Ministry of the Environment
of the Slovak Republic***



***STATE OF THE ENVIRONMENT
REPORT
SLOVAK REPUBLIC 2007***



***Slovak Environmental
Agency***





*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

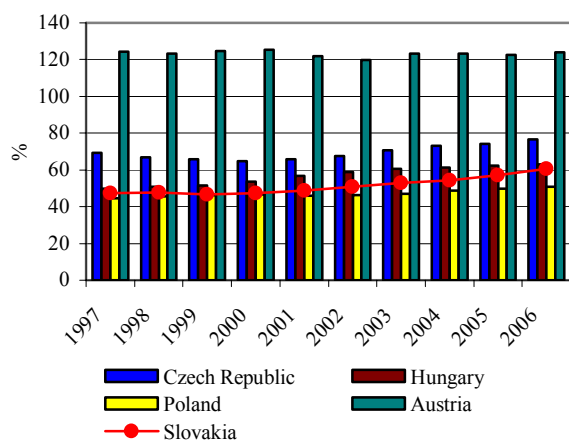
STATE OF THE ENVIRONMENT - CAUSES AND CONSEQUENCES

• ECONOMIC SECTORS AND THEIR IMPACT ON ENVIRONMENT

Economy trend in the Slovak Republic

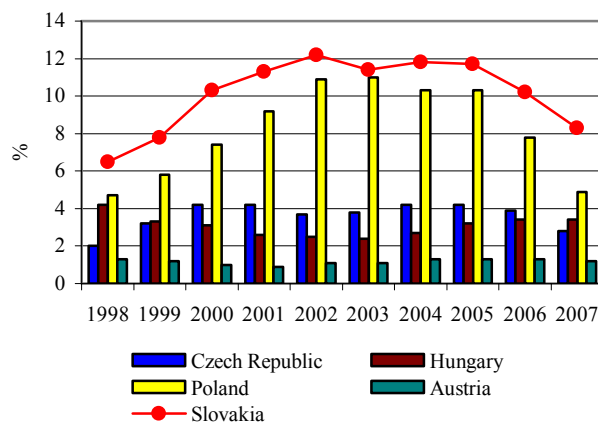
Economy of SR continued to grow in 2007. This was related to the growth in work efficiency, coupled with rising employment rate. In this year, **gross domestic product (GDP)** produced in current prices reached 1 851.8 bill. SKK and in reality increased by 10.4 %, compared to the previous year. This was the greatest year-to-year increment in the history of SR, as well as the greatest real growth in the GDP for the given year from among OECD countries and among all the EU-27 countries. The greatest share on GDP generation at the level of 36.5 % comes from industry.

Trend in GDP per capita in PPS (EU-27 = 100)



Source: Eurostat

Long-term unemployment (more than 12 months)*



* Share to total number of unemployed

Source: Eurostat

In 2007, selective survey of work force showed 291.9 thous. **unemployed** people, with the unemployment rate dropping down to 11 %. However, the Slovak Republic in 2007 showed the highest rate of unemployment as well as the highest rate of long-term unemployment (unemployment beyond 12 months) among the EU-27 countries.

Motor vehicles export represented an important factor for SR in 2007. Compared to 2000, it has grown by about 41 % in value with motor vehicle export belonging to the most important commodity (with 24.2 % share on export). Share of SR on motor vehicle export in 2007 within EU-27 was still only 2.7 % (greatest share reached by Germany - 57 %).

In 2007, **foreign direct investments (FDI)** to the SR economy were 27 359 bill. SKK, including 17 393 bill. SKK into the corporate sphere, and 9 966 bill. SKK into the banking sector.

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.

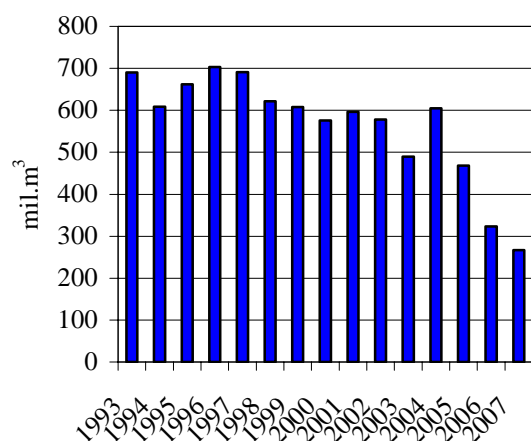
Industry has strengthened its position in the Slovak economy, increasing its **share on GDP generation** in 2007 to 36.5 %. **Industrial production** in 2007 showed increased growth dynamics (13 %), compared to the previous year. There was an increase in industry in the area of mineral exploitation (26.1 %) and industrial production (15.5 %).

♦ Demand of industrial production on the exploitation of resources

Compared to other EU countries, energy demand of the Slovak industry is very high. In 2006, share of industry on total energy consumption in Slovakia reached 42.3 % (in the EU-27 countries it was 27.6 %).

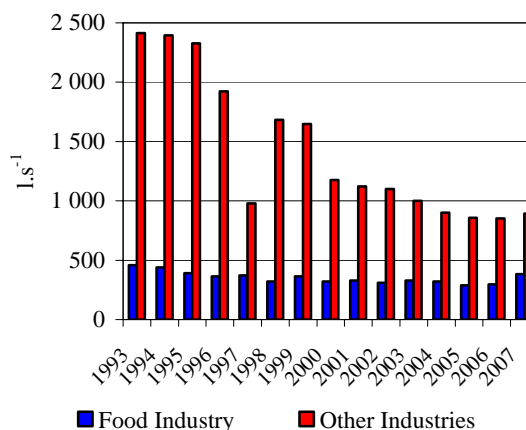
Since 1993, **surface water abstraction** by industry shows a falling tendency. In 2007, surface water abstraction by industry dropped by 61.4 %, compared to 1993. During the year 2007, as much as 81.8 % of total abstractions were industrial. Trends in **underground water abstraction** by industry show analogical tendency.

Development in consumption of surface water in industry



Source: SHMI

Advancement in underground water consumption in industry

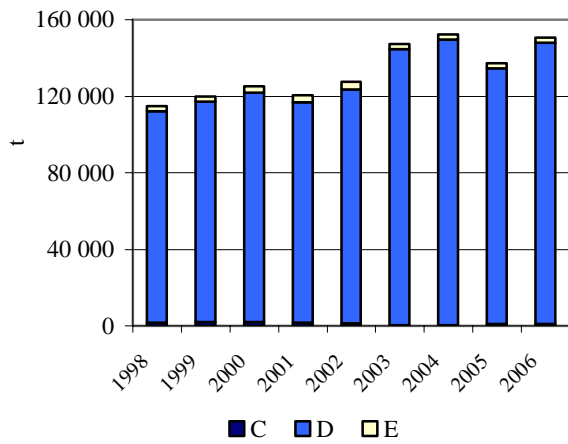


Source: SHMI

♦ Impact of industrial production on environment

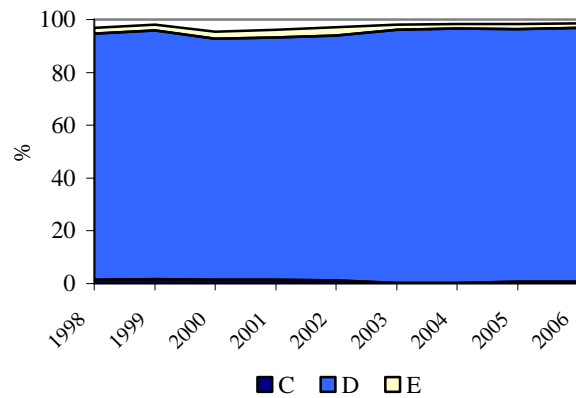
CO emissions from industry in 2006 made up as much as 98.6 % of large-size and middle-size stationary sources and emissions **increased** by 31.1 %, compared to 1998. **SO₂ emissions** from industry in 2006 made up as much as 99.4 % of large-size and middle-size stationary sources and emissions **decreased** by 46.5 %, compared to 1998.

CO emissions trend from stationary industrial sources



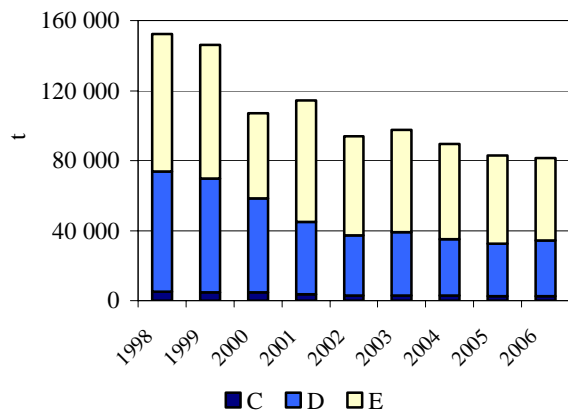
Source: SHMI

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



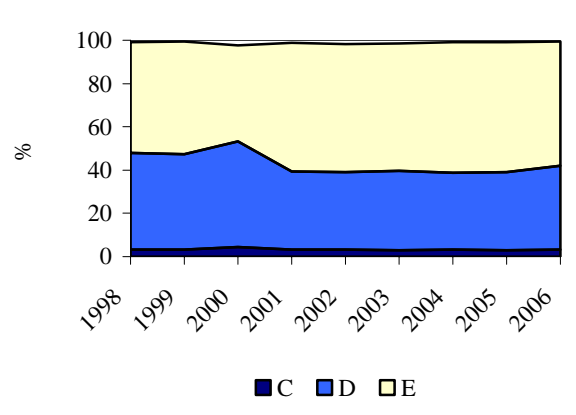
Source: SHMI

SO₂ emissions trend from stationary industrial sources



Source: SHMI

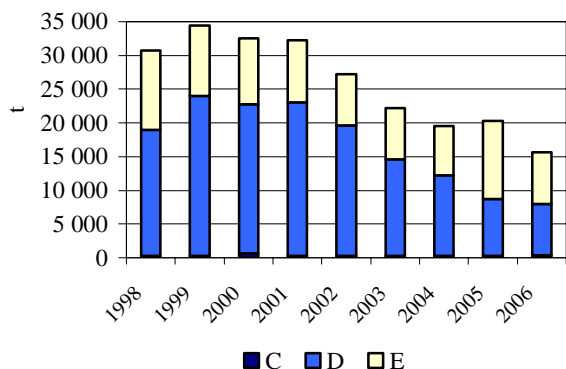
Share of the SO₂ emissions from stationary industrial sources on the overall SO₂ emissions



Source: SHMI

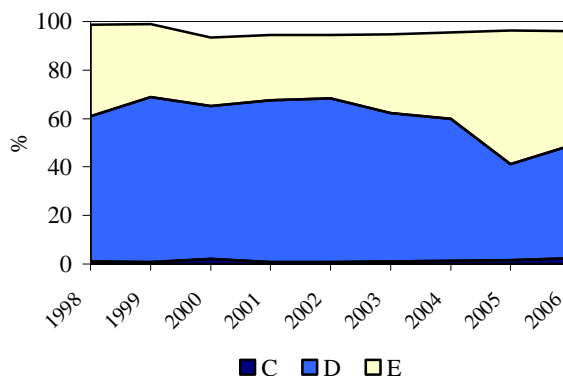
NO_x emissions from industry in 2006 made up as much as 94.4 % of large-size and middle-size stationary sources and emissions **decreased** by 39.4 %, compared to 1998. **SPM emissions** from industry in 2006 made up as much as 96.1 % of large-size and middle-size stationary sources, and emissions **decreased** by 49.1 %, compared to 1998.

SPM emission trend from stationary industrial sources



Source: SHMI

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

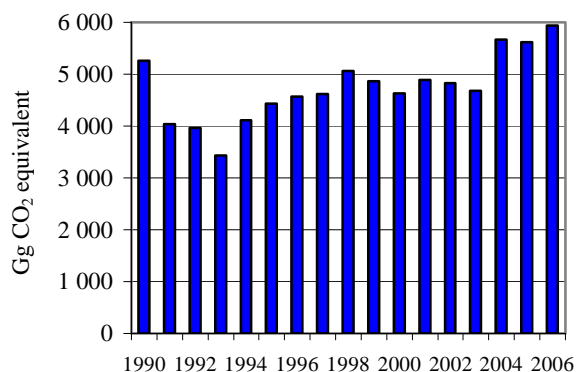


Source: SHMI

Heavy metal emissions by industry have had a decreasing tendency since 1990. In 2006, compared to 1990, only Cd emissions in industrial technologies increased.

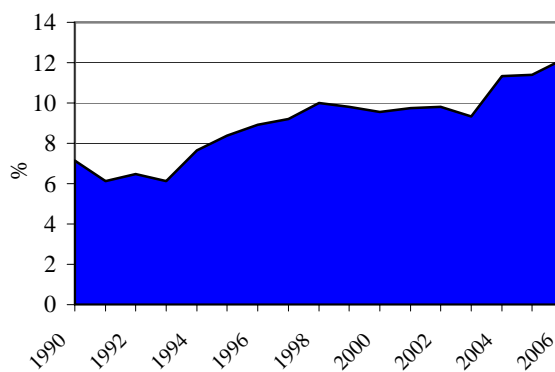
Aggregated greenhouse gases emissions from industrial processes in 1990-2006 had a slightly rising trend. Compared to 1990, in 2006, these emissions from industrial processes increased by 12.9 %.

Trend of aggregated emissions of the greenhouse gases from industry (Gg CO₂ equivalent)



Source: SHMI

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



Source: SHMI

In 2007, **industry alone generated 5 053 346 tons of waste** (54.5 % share in total waste generation), including **332 869 tons of hazardous waste** and **4 720 477 tons of other waste**.

Extraction of minerals

Changes that occurred in 2007 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 1999-2007

Extracted mineral	Measure unit	1999	2000	2001	2002	2003	2004	2005	2006	2007
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	2 208.6	1 851.56
Crude oil, including gasoline	kt	60.264	56.892	54.085	51.770	47.943	42.082	33.15	30.5	24.49
Natural gas	thous. m ³	218 569	227 038	195 938	200 812	186 797	178 088	150 851	136 881	500 550
Ores	kt	1 083.7	1 104.0	1 047.5	719.2	706.5	977.8	651.89	741.9	666.57
Magnesite	kt	1 423.8	1 535.2	1 573.0	1 464.5	1 640.9	1 668.9	1 555.0	1 467.8	1503.60
Salt	kt	100.2	101.8	104.0	102.7	104.8	104.3	105.1	122.5	116.76
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	6 309.2	6 528.40
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	5 502.9	5 113.50
Brick clay	thous. m ³	480.3	529.5	442.1	433.4	507.4	591.7	466.8	508.0	1 011.70
Limestone and cement raw materials	thous. m ³	294.1	320.2	302.3	332.7	384.9	569.5	690.6	673.5	627.10
	kt	1 398.1	1 419.5	1 614.6	1 547.4	1 649.4	3 479.8	3 743.3	4 131.2	4 107.80
Limestone for special purposes	thous. m ³	200.9	299.4	292.3	833.0	941.4	14.9	28.50	67.0	90.30
	kt	320.0	345.0	325.0	0.0	0.0	1 057.5	834.80	1 243.6	1 175.70
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	4 393.0	4 362.00
Other raw materials	thous. m ³ surface	896.1	983.7	1 026.9	1 216.8	1337.2	567.8	509.1	531.6	476.50
	kt underground	120.0	127.7	142.3	86.4	86.2	91.6	106.5	115.3	139.40
	kt surface	0.0	2.4	32.30	31.1	11.8	1 143.9	1 024.0	1 279.3	1 457.45

Source: MMO SR

Brown coal and lignite extraction in 2007 dropped again. Individual mines showed 357.03 kt of extracted volumes less than in 2007. This is the lowest extraction volume since 1997. Compared to 2006 the number of workforce in this industry decreased by 31.4 %.

Crude oil, gasoline, and natural gas extraction was also decreased, compared to the previous year. Total extracted volumes included 22 293 t of semi-paraffin crude oil, and 2 237 t of gasoline. Natural gas stores decreased by 500 550.2 thous. m³.

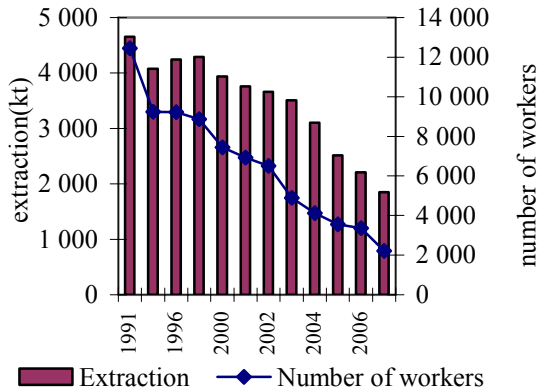
Exploitation of **ore minerals** decreased. The Siderit, Ltd. company in Nižná Slaná has the biggest share on all ore volumes, (640.3 kt). The Slovenská banká Ltd. company in Hodruša Hámre, contributed by 15 kt.

In 2007, there was a slight increase in exploitation of **non-ore raw material**. However, 1 503.6 kt of *magnesite* was extracted at three significant magnesite deposits (Jelšava, Lubeník, Hnúšť'a), which is a increasing by 35.8 kt, compared to the previous year.

In 2007, exploitation of *rock salt* (Solivary, Prešov) was at the level of 116.3 kt of salt in salt water. The amount of salt decreased by 6.2 kt compared to 2006.

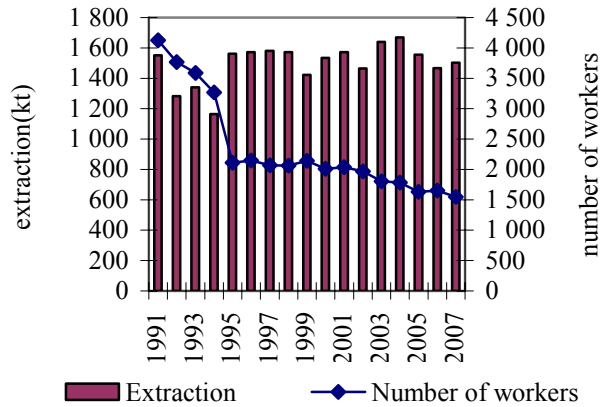
Basic indicators of mineral extraction trend in SR between the years 1991-2007

Trend in brown coal and lignite extraction



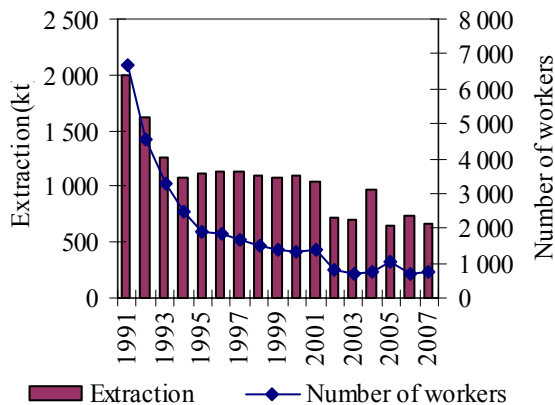
Source: MMO SR

Trend in magnesite extraction



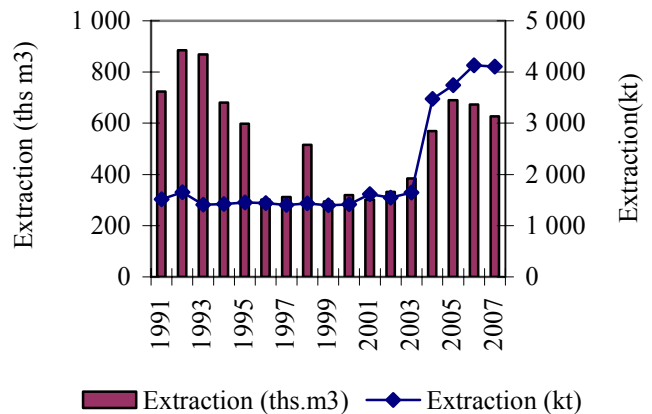
Source: MMO SR

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, 2007, the register had 16 576 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, 2007, there were 85 active (64 in the extraction site, 21 outside the extraction site) and 26 inactive **dumps** (26 in the extraction site, none outside of it) left after the extraction of minerals, and also 27 active (17 in the extraction site, 10 outside the extraction site) and 19 inactive (12 in the extraction site, and 7 outside the extraction site) **tailings dumps**. Compared to the previous year, territory with located dumps increased, while the area of tailings dumps decreased only slightly.

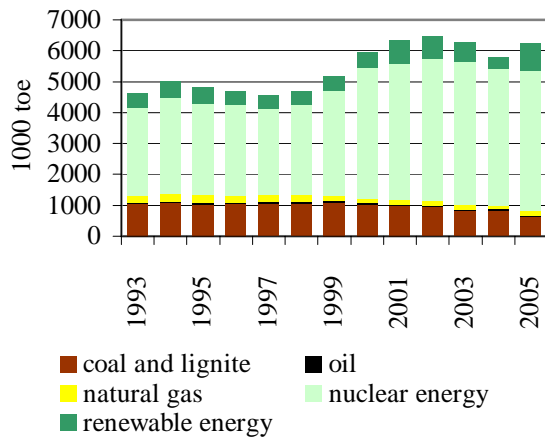
Energy management, Heat production and Gas management

♦ Energy sources balance

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

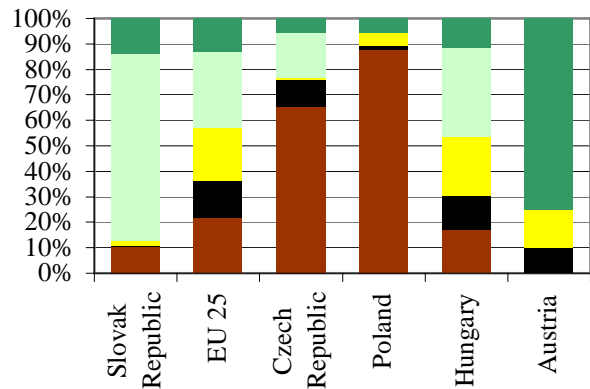
Structure of exploited PES in the SR since 1997 is typical for the increased consumption of gas fuels and renewable energy sources at the cost of consumed solid fuels, also due to more strict emission limits. Utilization of nuclear fuels in recent years plays an exceptionally significant role in the 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

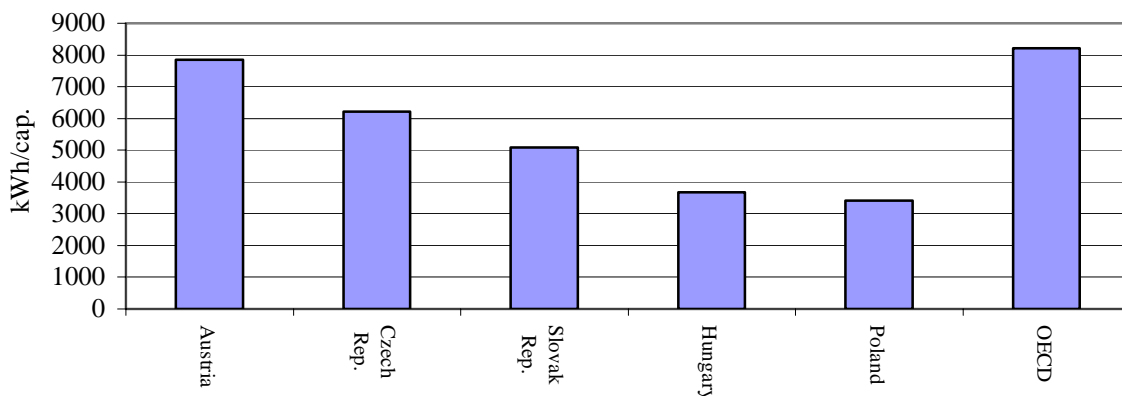


Source: EUROSTAT

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.

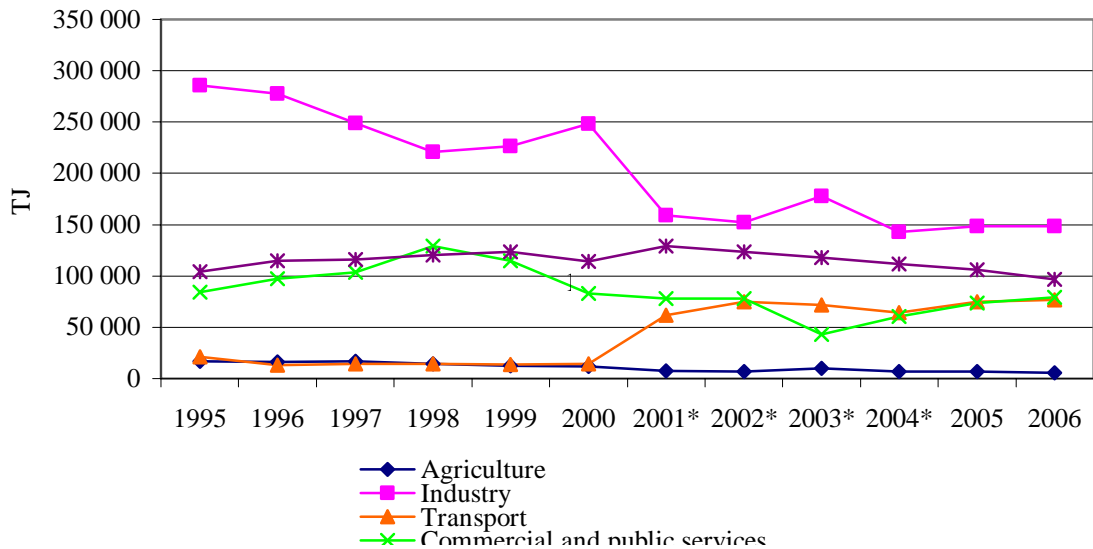
Electricity consumption per capita in 2006 – international comparison

Source: IEA



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

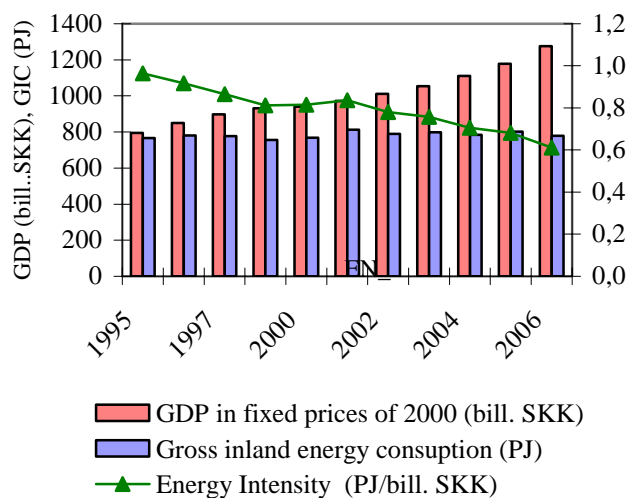
◆ Energy intensity

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 ($GIC/GDP=EI$). 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.

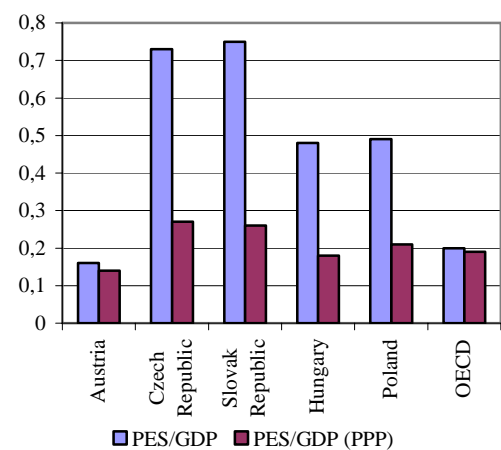


Trend in selected indicators of energy intensity in SR



Source: SO SR

Energy intensity in 2005 – 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 than 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	1999	2000	2001	2002	2003	2004	2005	2006
Nuclear power plant	2 200.00	2 640.00	2 640.00*	2 640.00*	2 640.00*	2 640.00*	2 640.00*	2 640.00*
Thermal power plant	3 132.68	3 144.92	3 190.00*	2 929.00*	3 319.04*	3 120.00*	3 090.00*	3 049.87*
Hydro power plant	2 419.62	2 420.52	2 470.00*	2 505.00*	2 507.46*	2 518.00*	2 488.00*	2 507.52*
Total	7 752.30	8 205.44	8 300.00*	8 074.00*	8 466.50*	8 278.00*	8 218.00*	8 197.39*

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 2006, total produced electricity in the SR energy network dropped on the year-to-year basis by 2 809 GWh to 29 291 GWh.

Overall domestic electricity consumption dropped on the year-to-year basis by 9.33 % to 26 026 GWh.

♦ **Gas management**

Slovak Gas Management Industries in Bratislava is the dominant company on the Slovak gas market, with the greatest market share. In 2007, the company provided services to approximately 1.466 mil. of clients in various segments (bulk clients, small clients, and households).

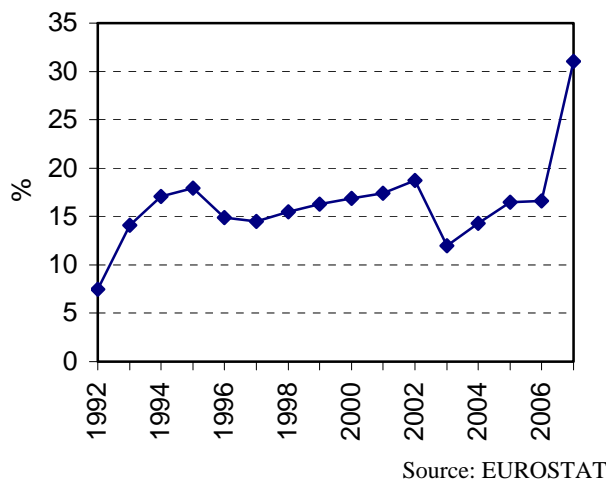
In 2007, most of domestic gas consumption is imported from the Russian Federation (5.4 bill. m³). Compared to 2006, the sale of natural gas on the designated Slovak territory in 2007 dropped from 6 283 mil m³ to 5 680 mil m³.

The Slovak gas distribution system is interconnected with the neighboring countries' networks, specifically with Ukraine, Czech Republic and Austria. Capacity of the transport network is more than 90 bill. m³ annually.

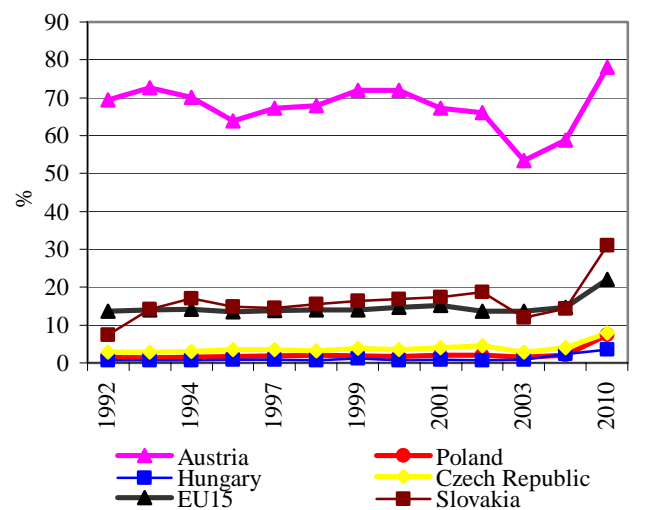
♦ **Renewable energy sources (RES)**

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 2007 was 16.0 %. 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.

Share of electricity from renewable energy to gross electricity consumption



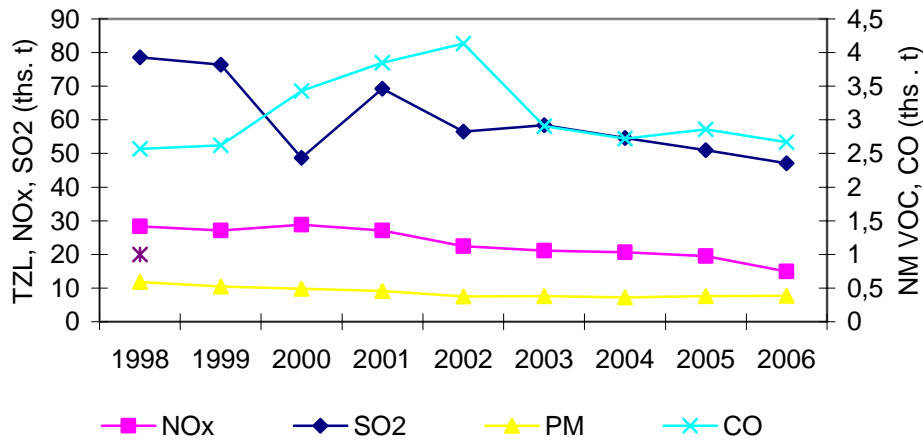
Share of electricity from renewable energy to gross electricity consumption – international comparison



♦ **Air pollution caused by energy production**

Over the recent years, sulfur oxides (SO₂), 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 the SR (thousand tons)



Source: SHMI

Power management sector has the most dominant share on the greenhouse gases emissions. In 2006, 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 by 36.5 %.

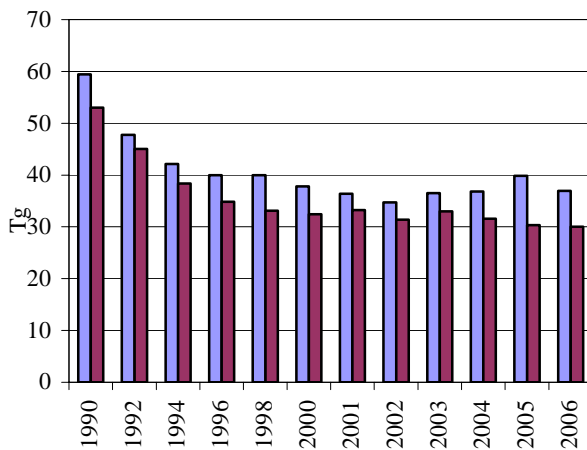
Trend of greenhouse gasses emissions from energy production in the SR (Tg CO₂ equivalent)

	1990	1992	1993	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
Energy sector*	58.59	47.23	44.37	42.60	43.19	43.39	41.66	40.56	37.82	40.64	38.55	39.03	37.81	37.40	37.19

*transport included

Source: SHMI

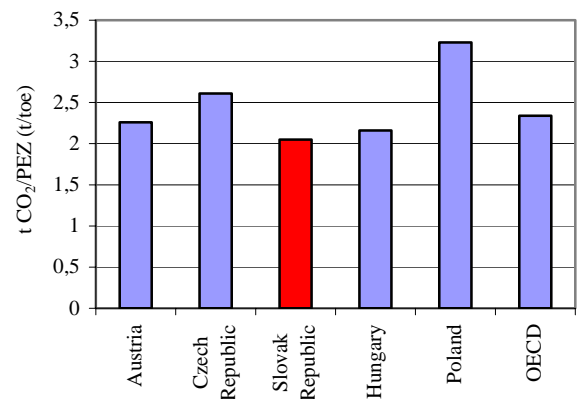
Trend of CO₂ emissions from energy production



■ overall emission CO₂ ■ emission CO₂ from energy production

Source: SHMI

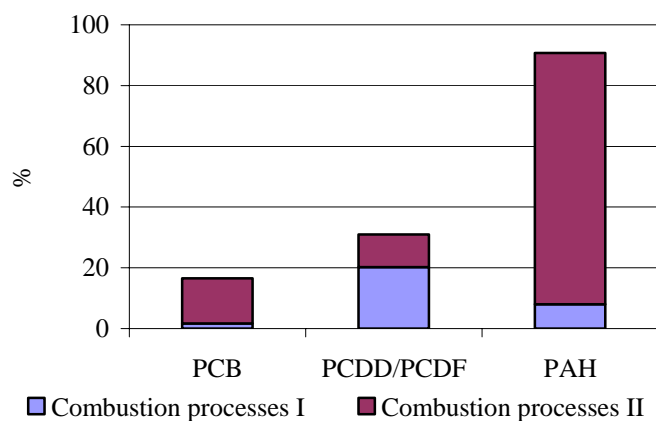
Energy Intensity according to CO₂ in 2005 – international comparison



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, PCDD/PCDF and PAH emissions from energy production in 2006



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 2006 emission of Cr, Ni and Mn 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 thermal contamination. Greatest load exists in the chemical oxygen demand for the COD_{Cr} (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 from electricity production and gas management

In 2006, the SE company, Inc. produced total volumes of 1 132 888 tons of waste of all categories, including 99.3 % from the „other waste“ category.

The SPP Inc. company produced 12 169 tons of waste in 2006, including 10 154 tons of other waste, and 2 015 tons of hazardous waste.



Transport

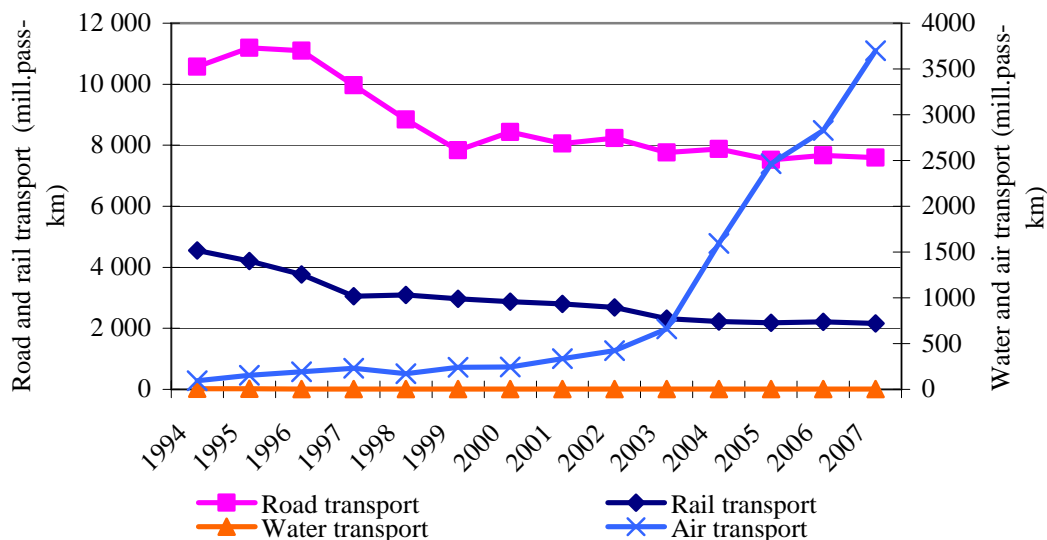
♦ Passenger and freight transport

In the area of road and railway passenger transport, the trend of long-term drops in transported passengers and total transport performances continued. 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 %.

There was a significant rise in modal split in air passenger transport in the monitoring period of 1993-2007 (from 37 mil. person-kilometres in 1993 to 3 699 mil. person-kilometres in 2007)

Transport of goods and modal split in road freight transportation grow continually. Road transport shows the greatest share on modal split by cargo transport – app. 70 %. Modal split by railroad cargo transport dropped by more than 30 %, compared to 1993, while modal split by aquatic cargo transport in 2007 stayed on the same level as in 1993.

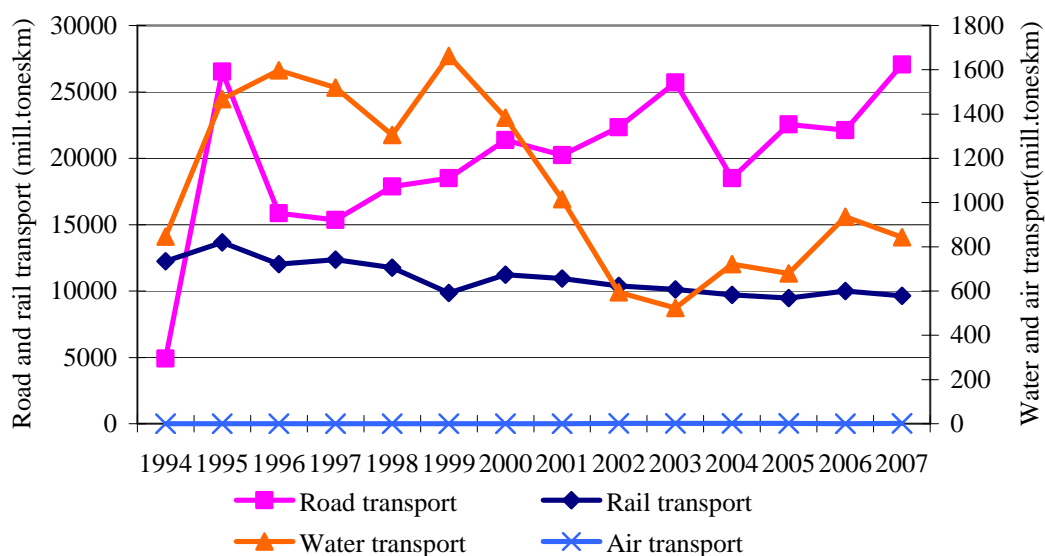
Passenger transport demand by mode (mill. pass-km)



Source: SO SR



Freight transport demand by mode (mill. tkm)



Source: SO SR

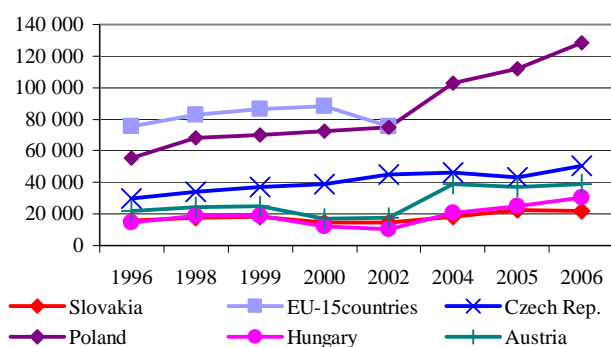
MHD companies of Bratislava, Košice, Prešov, and Žilina operate the municipal mass passenger transport (MHD).

Over the period of 14 years (1993-2007), there was reported a 23.3 % 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.

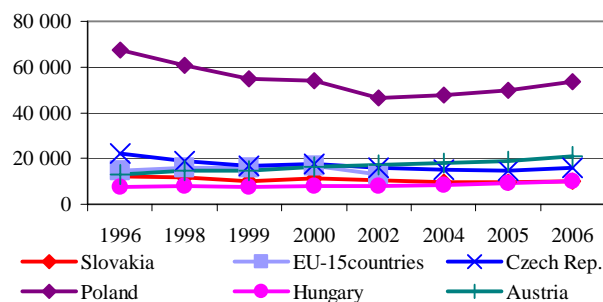
Indicators of city transport

Indicator	1993	1997	1999	2000	2002	2003	2004	2005	2006	2007
Total number of transported passengers (ths.)	525 744	527 662	485 472	404 539	370 018	394 465	383 118	395 064	400 673	403 466
Trams										
Transported passengers (ths.)	188 768	139 668	117 714	100 185	96 553	104 560	104 391	109 101	109 836	109 705
Seat kilometres (mill. km)	2 734	1 301	1 888	1 802	1 780	1 764	1 818	1 822	1 797	1 792
Trolleybuses										
Transported passengers (ths.)	43 346	74 020	71 934	62 997	54 707	59 034	57 688	58 032	59 071	60 655
Seat (mill. km)	717	796	1 039	1 029	1 048	1 110	1 103	1 075	1 085	1 104
Buses										
Transported passengers (ths.)	293 629	313 974	295 824	241 357	218 758	230 871	221 039	227 931	231 766	233 106
Seat (mill. km)	4 998	3 146	4 638	4 011	3 990	3 899	3 881	3 846	3 823	3 839

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

Total number of motor vehicles in 2007 over the period on 1993-2007 grew by 27 %. Major increase in the number of motor vehicles in 2007 was recorded in the categories of heavy trucks and pickup trucks (grew by 90 %, compared to 1993), and passenger cars (grew by 44 %, 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. 24 % over the last 12 years.

Number of motor-vehicles by individual types (pcs)

Total number of vehicles	1993	1997	1998	2000	2002	2003	2004	2005	2006	2007
Passenger cars	994 933	1 135 914	1 196 109	1 274 244	1 326 891	1 356 185	1 197 030	1 303 704	1 333 749	1 433 926
Trucks and Pick up vans	101 552	103 080	111 081	110 714	130 334	142 140	140 395	160 089	172 781	196 141
Special vehicles	46 121	45 376	43 690	39 188	34 150	32 033	22 672	22 648	18 708	18 983
Road tractors	*	600	1 721	3 281	6 837	8 851	11 435	14 141	16 475	19 556
Buses	12 655	11 325	11 293	10 920	10 589	10 568	8 921	9 113	8 782	10 480
Tractors	65 150	63 145	63 448	64 351	62 644	61 690	44 080	46 544	43 888	44 098
Motorcycles (excl. small)	81 263	81 062	100 891	45 647	47 900	48 709	51 977	56 366	58 101	63 897
Trailers and Semi-trailers (included bus)	167 174	182 893	191 241	201 269	213 167	218 517	170 491	188 411	188 256	199 329
Others	-	-	-	2 226	1 306	1 161	-	101	535	3 414
Total	1 468 848	1 623 305	1 719 474	1 751 840	1 833 818	1 879 854	1 647 001	1 801 117	1 841 275	1 989 824

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

Source: SO SR

◆ Transport infrastructure

In 2007, the SR transport network included 17 875 km of roads and motorways. Highways represented 365 km of the network. The length of railways was 3 629 km, with 1 578 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	2001	2002	2003	2004	2005	2006	2007
Length of roads and motorways	17 865	17 867	17 734	17 736	17 750	17 772	17 780	17 803	17 828	17 875
of which motorways	198	215	295	296	302	313	316	328	328	365
Length of railways	3 661	3 673	3 665	3 662	3 657	3 657	3 660	3 658	3 658	3 629
of which electrified lines	1 415	1 516	1 535	1 536	1 556	1 558	1 556	1556	1 577	1 578
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

♦ **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 – 31 %, 39 % in case of NO_x and 19 % in case of NM VOC.

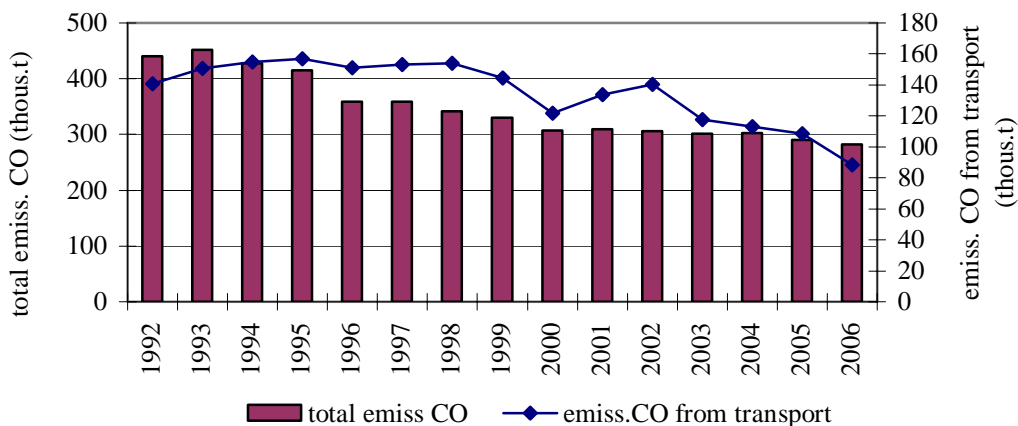
Solid pollutants represented 20 % of all emissions in 2006, while the SO₂ emissions showed 0.2 %.

Transport's share on heavy metal emissions is approximately 2.5 %, with copper showing the greatest share on heavy metal emissions by transport (6.6%) followed by zinc (2.4%), and lead (2.5 %). Similarly, in case of other heavy metals there was a slight increase in the values of the recorded emissions, compared to the previous year.

Transport's share on total greenhouse gases emissions is approximately 14 %, with the CO₂ share of 17.0 %, and the N₂O share of 5.0 % being among the most dominant.

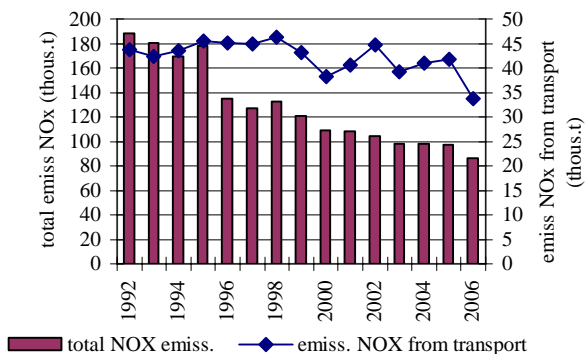
Road transport shows major share on total transport emission production. Share of other types of transport on individual pollutants is very small.

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



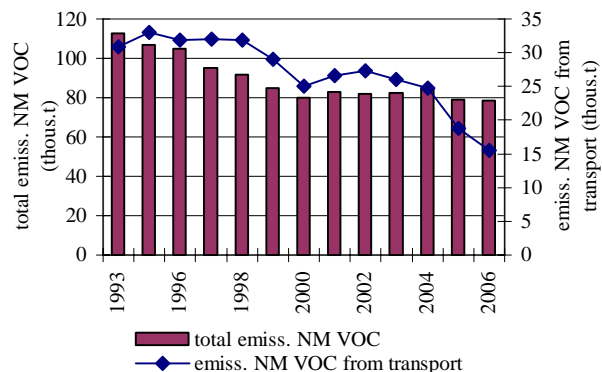
Source: SHMI

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



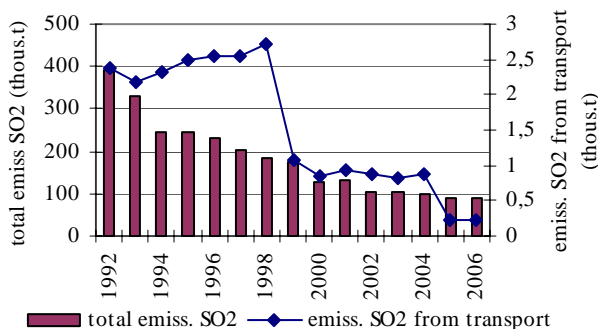
Source: SHMI

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



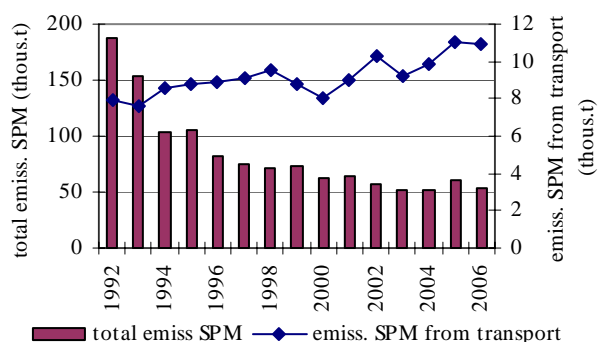
Source: SHMI

Trend in SO₂ emissions from transport compared to total SO₂ 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

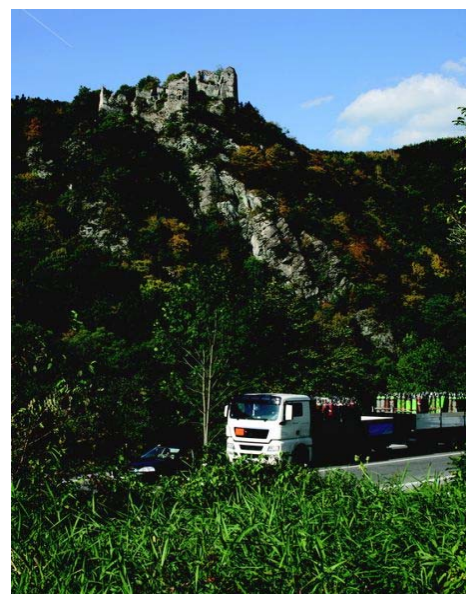
In 2007, there was 137 291.70 tonnes of waste generated in the area of transportation. This included 67 544.56 tons of hazardous waste, and 69 747.14 tons of other waste. Increase in 2006 was

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 2007, there is a slight decrease in the number of traffic accidents, compared to the previous year.

Traffic accidents aftermath analysis still shows a negative trend, with increasing numbers of traffic casualties, heavily injured, and lightly injured. However, over the monitored period of 1993-2007, the number of traffic accidents increased by 20 %.

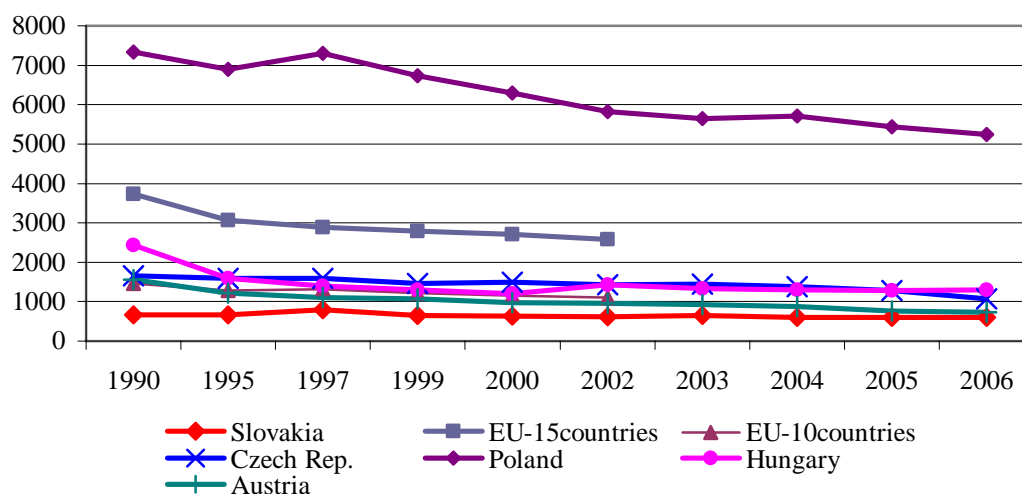


Trend of traffic accidents in SR

Indicators		1993	1999	2000	2001	2002	2003	2004	2005	2006	2007
Traffic accidents	Number of accidents	50 159	55 683	50 930	57 258	57 060	60 304	61 233	59 991	62 040	61 071
	Killed	584	647	626	614	610	645	603	560	579	627
	Heavily injured	2 736	2 684	2 205	2 367	2 213	2 163	2 157	1 974	2 032	2 036
	Lightly injured	8 682	8 782	7 891	8 472	8 050	9 158	9 033	8 516	8 660	9 274

Source: MoI SR, SO SR

Number of people killed in road accidents – international comparisons



Source: EUROSTAT

Agriculture

◆ Economy of agriculture

Total Slovak economy grew from 2007 faster than agricultural economy, which resulted in reduced share of agriculture on major national economy indicators. **Percentage of agriculture on gross domestic product dropped to 2.5 %.**

◆ Structure of agricultural land

In 2007, **total area of agricultural land** in the SR was 2 428 899 ha. **Loss** of agricultural land including the arable land transfer to forestland, non-agricultural and non-forested land in 2007 was **2 372 ha**. Loss in agricultural land was mostly the result of construction activity (1 398 ha), including the civil and household construction (566 ha), 410 ha of agricultural land was forested. In 2007, there was a reduction in the size of arable soil, fruit orchards, gardens, vineyards and hopp-fields. Only permanent grasslands showed a slight increase (47 ha).

Size of arable land per one inhabitant in 2007 was **0.264 ha**.

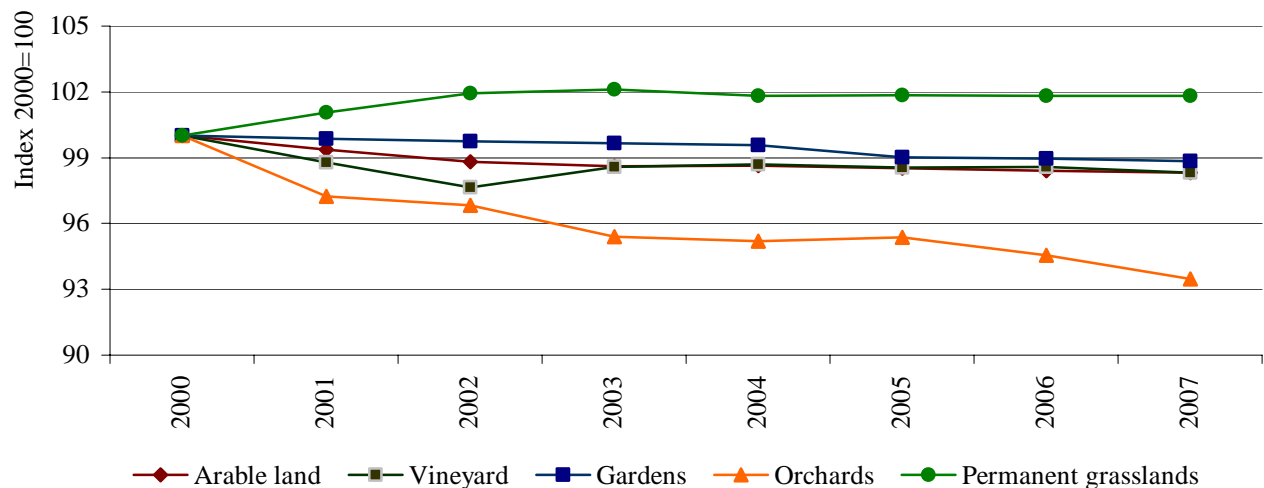
Structure of the agricultural land (state to the date 31st December 2007)

Type of land	Area(ha)	Share of agricultural land (%)
Agricultural land total	2 428 899	100.00
Arable land	1 425 896	58.71
Hop-fields	530	0.02
Vineyards	27 243	1.12
Gardens	76 720	3.16
Orchards	17 590	0.72
Permanent grassland	880 920	36.27
Total area of SR	4 903 573	-

Source: GCCA SR



Agricultural land fund structure after the year 2000

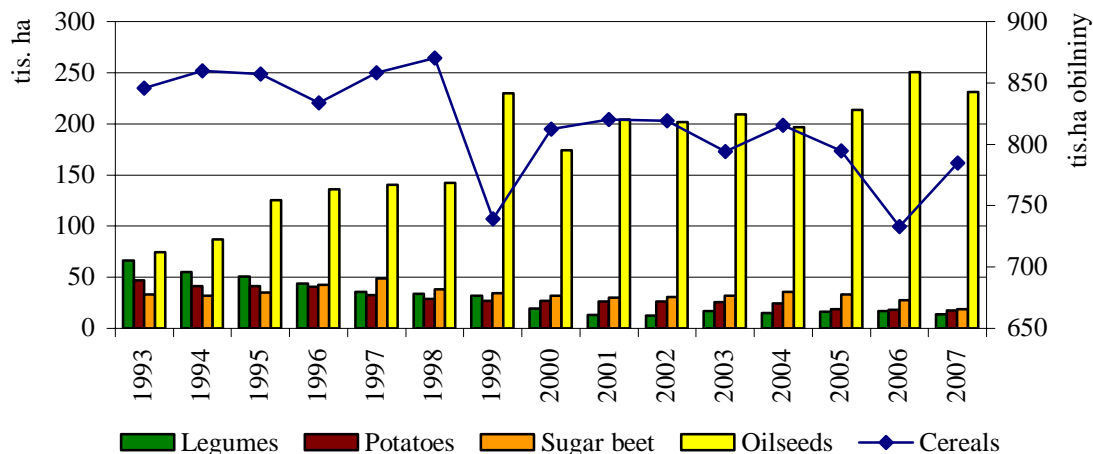


Source: GCCA SR

Plant production

In 2007, harvest areas in most agricultural crops **decreased from the previous year**, especially in sugar beet, legumes, oilseeds and potatoes. The year-to-year increase was in harvest areas of cereals.

Harvested areas of agricultural crops



Source: SO SR

Compared to 2006, **genetic diversity** (represented varieties of agricultural crop cultivated in the SR) in 2007 shows **an increase** in all mentioned crop categories, with the exception of fodder beet.

Number of agriculture plant's varieties in the SR

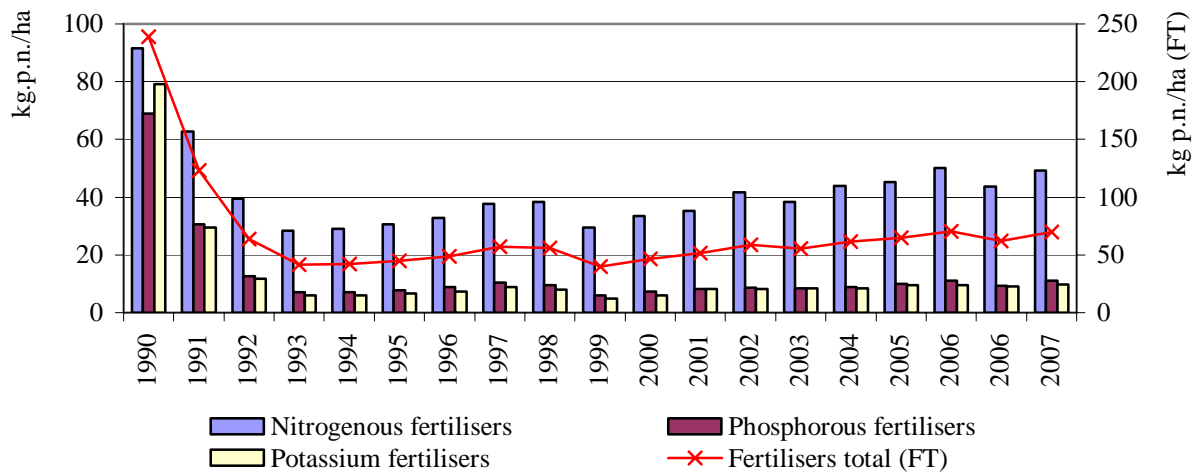
Agricultural plant	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007
Winter wheat	22	23	22	23	24	25	28	28	34	37	41	45	57	75	83
Winter barley	10	10	11	8	9	10	11	11	13	14	11	14	14	20	21
Spring barley	26	25	26	27	24	22	23	24	21	24	28	29	30	36	41
Potatoes	44	48	60	72	70	67	69	75	78	81	90	103	101	109	112
Rapeseed	7	10	14	12	12	9	14	16	19	22	25	32	29	35	41
Sugar beet	28	37	40	52	58	61	63	52	53	42	42	38	41	47	56
Fodder beet	12	16	16	13	12	6	8	8	8	8	7	6	6	6	6

Source: RIPP

Fertiliser consumption

In 2007, consumption of **fertilisers** was 70.1 kg of pure nutrients per hectare of agricultural land.

Fertilisers consumption in Slovakia (kg pure nutrient/ha)

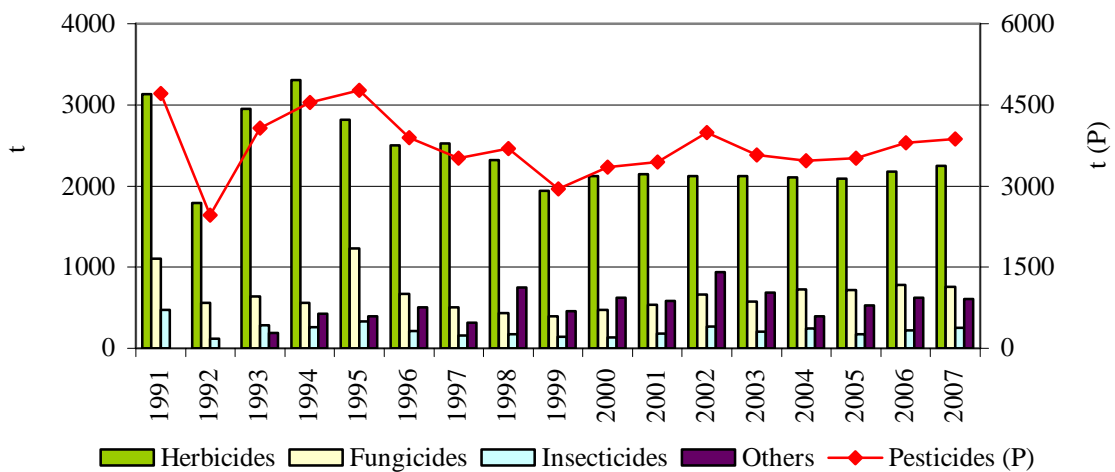


Source: CCTIA

Pesticides consumption

Compared to 2006, total consumption of pesticides in 2007 increased by 1.6 %. Altogether, 3 867 t of pesticides were applied, including 2 246 t of herbicides, 757 t of fungicides, 254 t of insecticides, and 610 t of other pesticides.

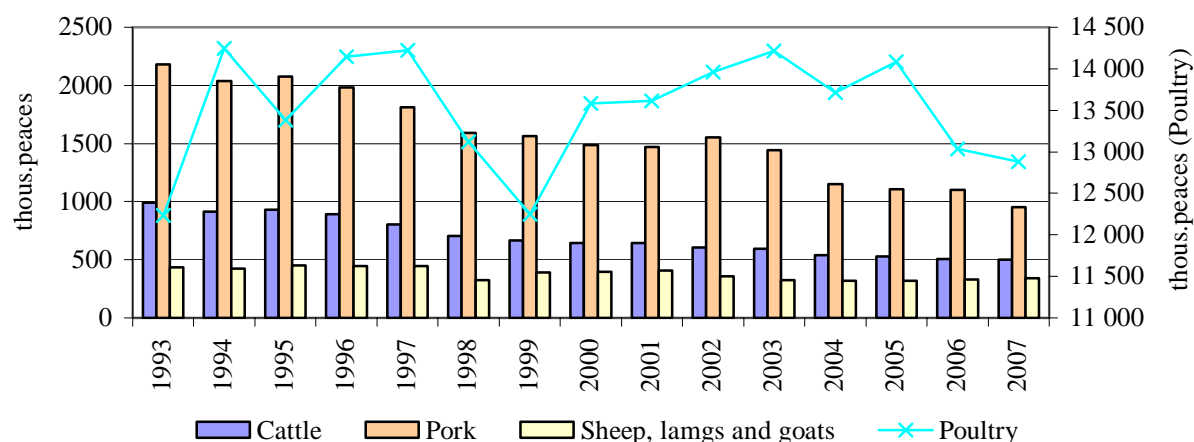
Pesticides consumption in Slovakia (t)



Source: CCTIA

Animal production

In 2007, 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 sheep.

Number of livestock breed in the SR

Breed	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2005
Cattle	5	5	5	5	6	6	11	11	11	11	11	11	12	11	8
Pork	15	15	15	15	15	15	16	15	13	11	11	11	11	8	5
Sheep	8	9	10	9	9	12	12	13	12	12	13	13	13	13	7
Goats	2	2	2	2	2	2	2	2	2	2	2	2	3	2	4

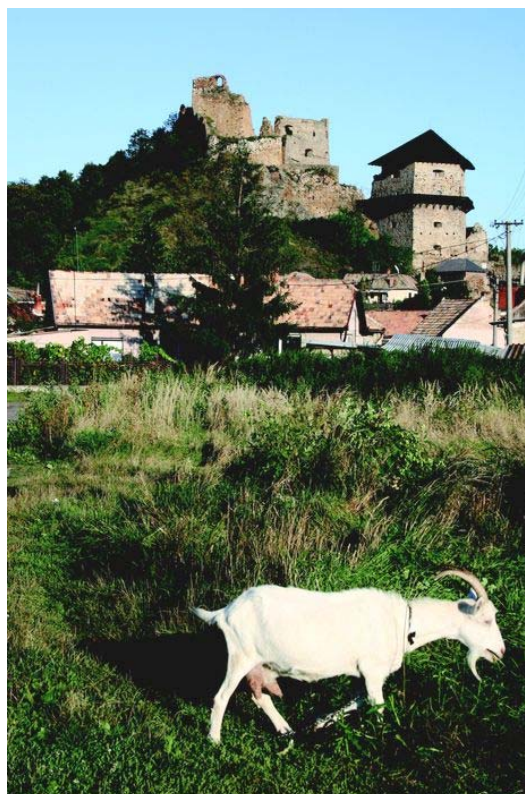
Source: RIAP

Melioration

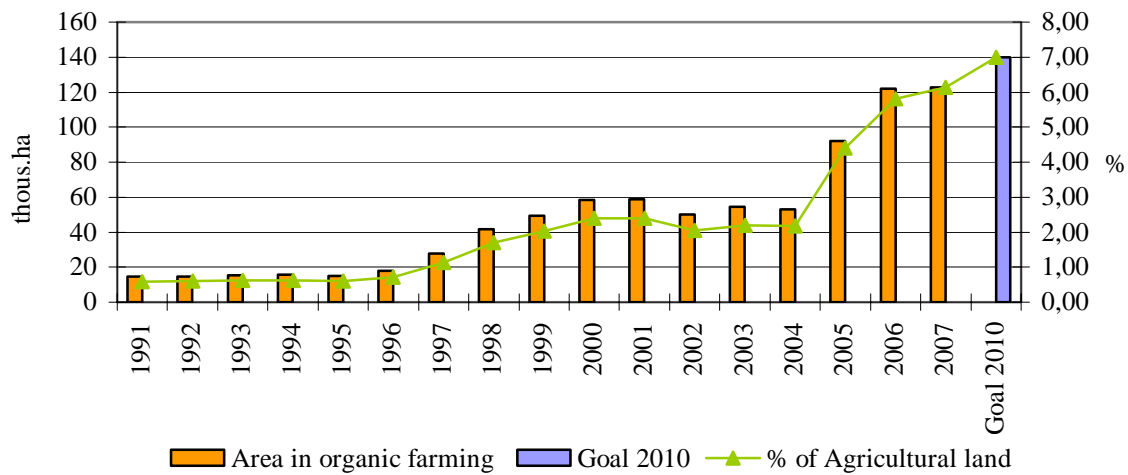
After 2000, there was a falling trend in the size of irrigated territories, analogous as utilisation of water for irrigation purposes with certain fluctuations. In 2006, there was 25 325 ha of irrigated agricultural land.

Organic farming

In 2007, the system of organic farming in the SR included 278 subjects farming on 122 589 ha of agricultural land, which is 6.14 % of total agricultural land. The goal is to implement organic farming practices on 7 % of total agricultural land by 2010.

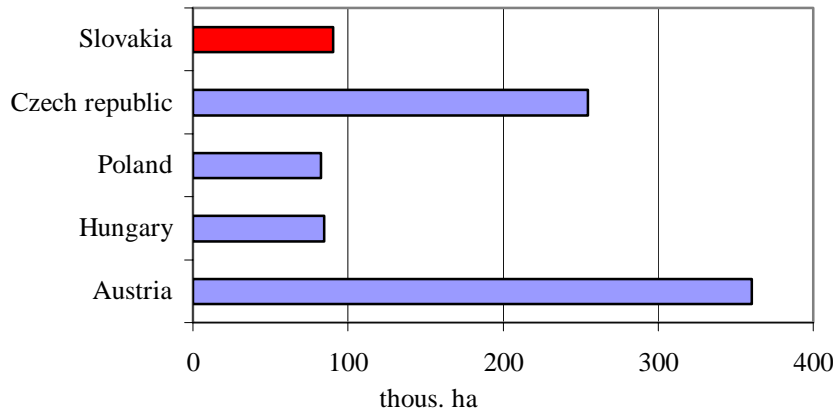


Trend in the organic farming area



Source: CCTIA

Organic farming area in 2005 – international comparison



Source: EUROSTAT

Agriculture demands in exploitation of resources

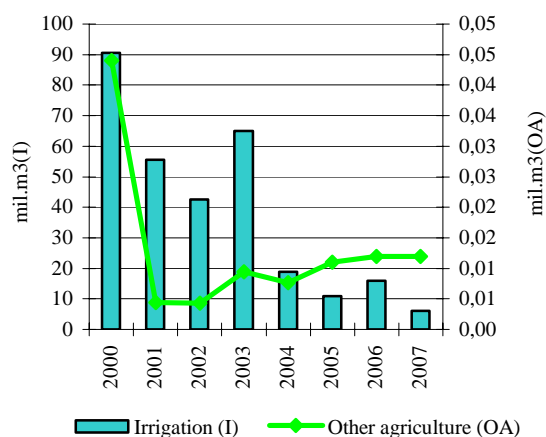
Since 2002, there has been a continuation **decrease in the consumption of solid fuel**. Since 2003, there is a falling trend in the consumption of gas fuels, heat, and electricity. Consumption of liquid fuel decreased from the previous year, as well.

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

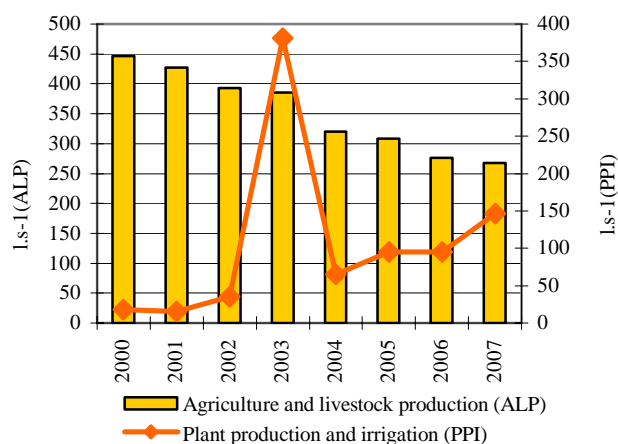
Kind of fuel	2002	2003	2004	2005	2006
Solid fuel	133	131	82	65	55
Liquid fuel	2 665	2 987	3 250	3 417	3 000
Gas fuel	1 869	3 261	1 781	1 670	1 263
Heat	270	300	181	179	168
Electricity	1 850	3 294	1 530	1 411	1 325

Source: SO SR

Compared to 2006, in 2007, there was a decrease in surface water volumes used in agriculture for irrigation purposes. On the other hand, volumes of groundwater used in agriculture for plant production and irrigation purposes increased. Slight decrease was in ground water volumes used in agriculture and livestock production.

Trend in surface water use in agriculture


Source: SHMI

Trend in groundwater use in agriculture


Source: SHMI

Production of renewable energy from agriculture

Presently, agricultural land is used for cultivation of bio-energy produce designated for bio fuel production. Biomass category used to produce liquid bio fuels contains mainly oilseeds and grains that yield vegetable oils, their derivatives (i.e. methyl esters of vegetable oils, mainly MERO rape seed oil) and alcohols (ethanol, methanol and their derivatives – methyl-t-butyleter (MTBE), ethyl-t-butyleter ETBE). Biomass used to produce gaseous products includes green hydrocarbon forage and farm animals excrements.

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 2007, there were 4 biogas production facilities in operation in Slovakia. Biogas was produced from cattle manure at the volume of the 576 thous.m³.

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)	
	2006	2007	2006	2007	2006	2007
Thick-sown cereals - total	565 665.38	612 136.70	3.27	3.13	739 890.30	766 395.20
Maize	151 005.65	157 255.60	7.77	5.56	1 173 308.80	874 341.14
Sunflower	108 816.00	64 746.20	4.62	4.44	502 729.90	287 473.13
Rapeseed	122 511.38	153 830.50	4.24	4.18	519 446.60	643 011.50
Orchards	7 684.29	7 329.70	3.50	3.50	26 894.00	25 654.00
Vineyards	16 262.09	15 902.00	1.50	1.50	24 393.00	23 853.00
Flight from permanent grasslands	82 000.00	74 476.60	2.00	2.00	164 000.00	148 953.20
Total	1 053 944.80	1 085 677.30	-	-	3150662.60	2 769 681.17

Source: RIPP

Note: In calculating biomass for densely-sown grains we considered average yealds of cereals in the corresponding year in Slovakia and ratio of grain and straw to total biological yeald (ratio of grain and straw was 1 : 0.9). To produce heat, it is possible to use approximately 40 % of straw from densely-sown cereals. About 60 % of produced straw is added to forage rations for livestock, part of it is used for bedding, and another part is used to balance C in soil. For this reason the table shows only the value of usable straw production potential to produce heat. For maize, the calculated grain – to – corncomb ratio is 1 : 1.4, for sunflower it is 1 : 2.2, for rape seed it is 1 : 2.

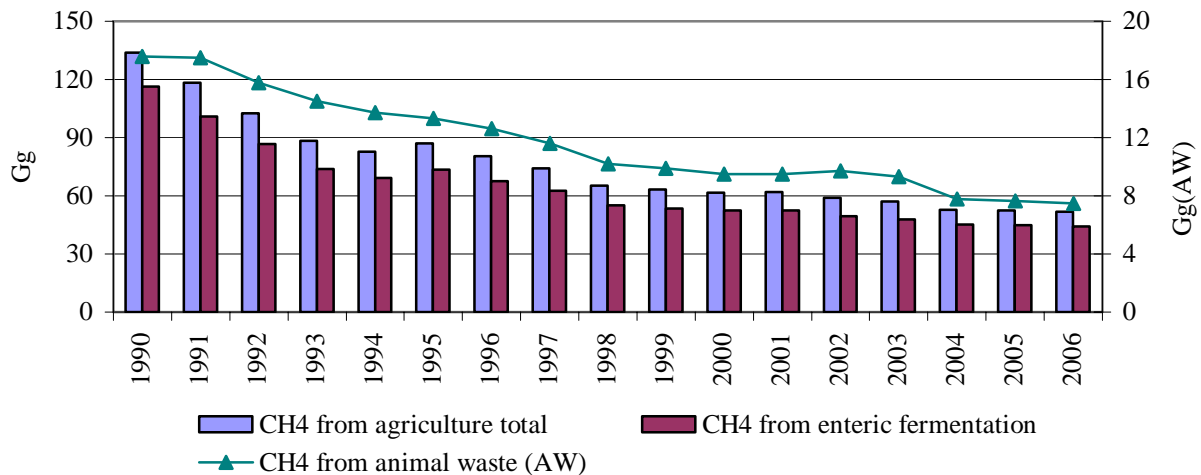
Impact of agriculture on environment

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 2006, agriculture produced 51.7 thous. tons of methane.

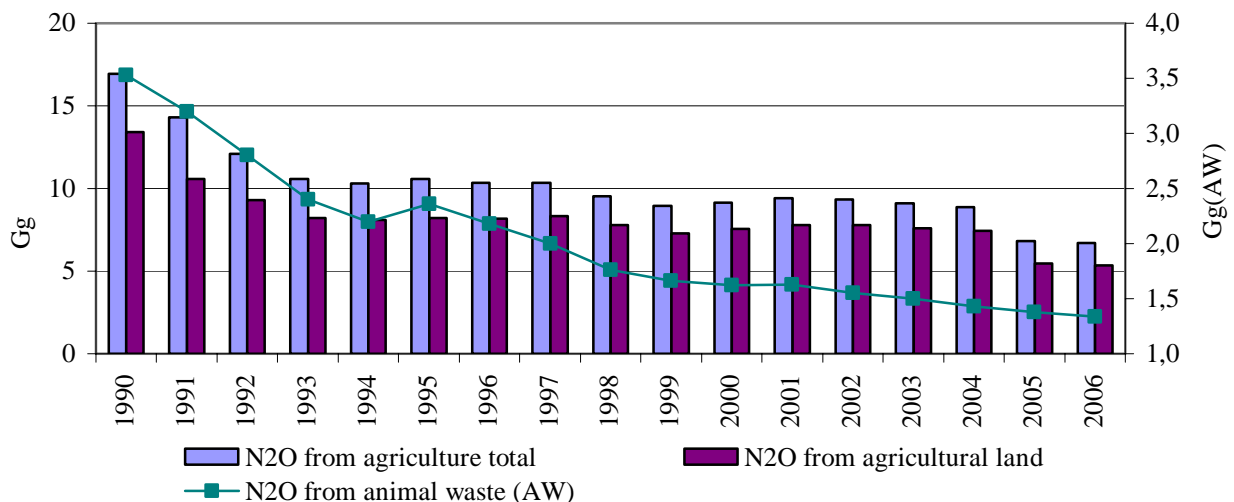
Trend in methane emissions from agriculture according to type of activity



Source SHMI

Production of nitrous oxide from agriculture is rapidly decreasing, due to a significant reduction in the use of fertilisers. In 2006, agriculture produced 6.7 thous. tons of nitrogen monoxide.

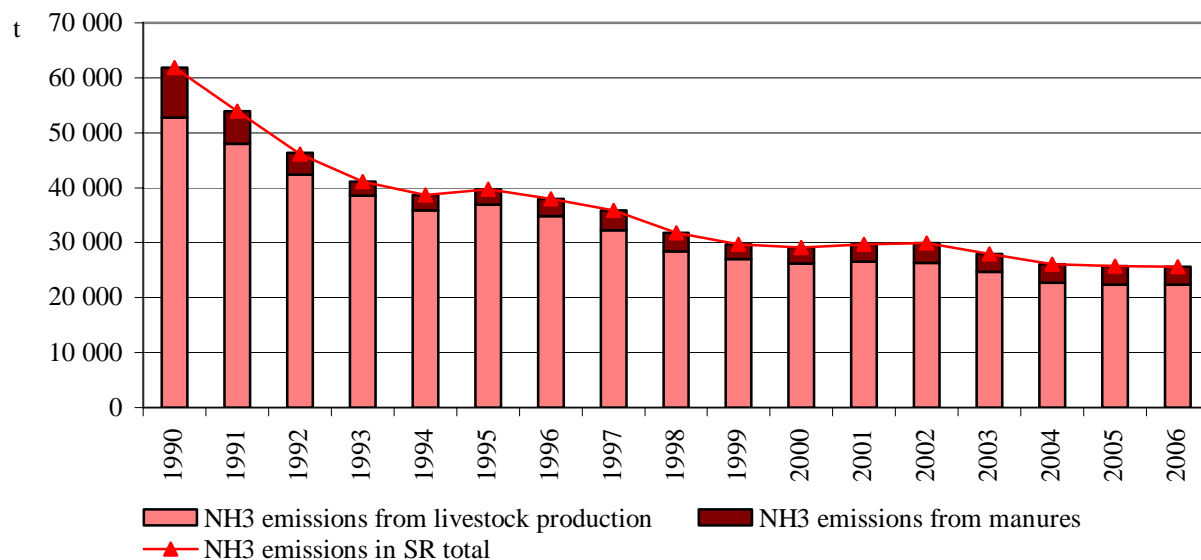
Trend in nitrogen monoxide emissions from agriculture according to type of activity



Source SHMI

Agriculture is the biggest producer of ammonia (NH₃). NH₃ 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 2007, there was 274 984 m³ of discharged wastewater related with agricultural activities.

Discharged amount of waste water in SR related to agriculture in 2007

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	107.254	7.202	7.754	23.793	0.001
Untreated	167.730	0.000	0.000	0.000	0.000
Total	274.984	7.202	7.754	23.793	0.001

Source: SHMI

Production of waste in agriculture

In 2007, there were 649 497.45 tons of total waste produced in agriculture, which is 91 947 tons less than in 2006. Of total produced waste other waste was 636 861.80 tons, which is 78 635.06 tons less than in 2006. Produced hazardous waste in 2007 was 12 635.65 tons of total waste volumes, which is 13 311.7 tons less than in 2006.

Forestry

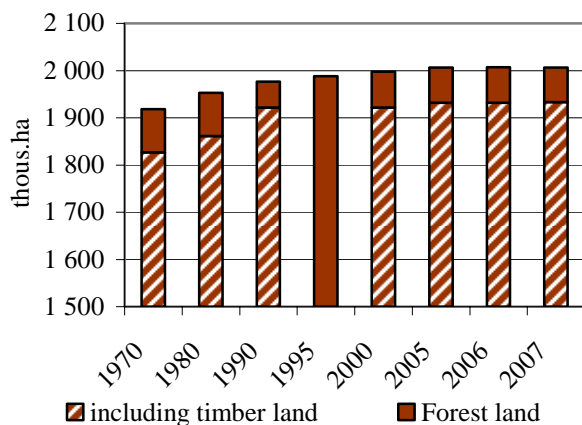
◆ Share of forestry on GDP production

GDP value for forest management in 2007 in current prices was higher only slightly (by 0.18 % or 8.5 bill. SKK) compared to the previous year, which caused reduction in the share of forest management on Slovakia GDP by 0.06 % down to 0.46 % (volume of wood production and sale was similar to 2006 with monetary value for wood increasing by 8 %).

◆ Structure of forest land

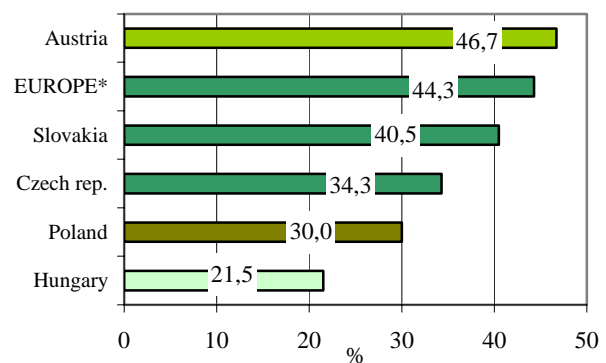
Slovak Republic belongs to the countries with the highest rate of **forestation**. **Forest land** in Slovakia in 2007 was about **40.9 %** (2 006 601 ha) of total area of the state - there has been a long-term, continuous increase in their size. Timber land in 2007 represented app. 96.3 % (1 932 942 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 km² per 1 000 inhabitants**. Since 1950, size of forest land grew by 13.3 %, 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



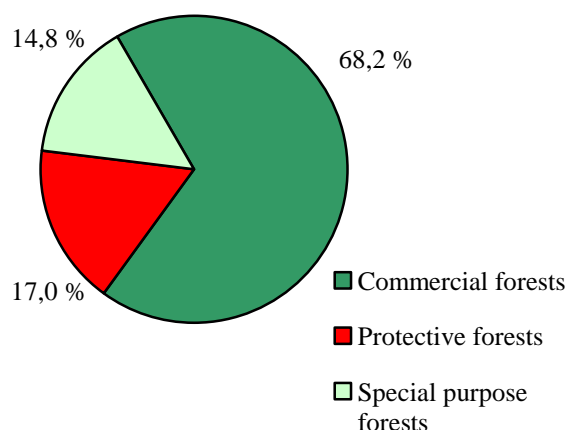
* – including Russian Federation;

Source: Global Forest Resources Assessment 2005, FAO

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 55.5 % of forests**, which is 14.1 % 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 **5.6 %** of total SR forest land.

Due to the increased demand for public benefit functions of forests, there was a gradual increase in the size of protection forests (from 7.9 % in 1960 to the present level of 17 %, the size is stabilized since recent years) and also forests for unique purposes (forests affected with pollution were removed from this category, which caused reduced size of these forests). Majority of production forests belong to poly-functional forests that also have other associated ecological and social functions, while only 6.7 % of forests are located in purely production type.

Spatial representation of forest categories in 2007



Source: NFC

Overview of area according to function – protective forests (PF) and special purpose forests (SPF) (2007)

Function - PF	% of PF
Erosion control	75.6
Water management	22.2
Deflation control	0.7
Avalanche control	1.5
Bank protective	0.2
Function - SPF	% of SPF
Water protective	4.5
Recreational	9.7
Health resort-therapeutic	1.2
Nature protection	12.7
Air pollutants control	37.0
Game management	6.8
Education-research	28.0

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 (59.5 %) compared to coniferous trees (40.5 %). There are **introduced tree types** commonly growing within broad-leaved tree vegetation areas. Their area has not increased over the recent decades (3.08 %), with the exception of *Robinia pseudoacacia*, that grows on non-green lands.

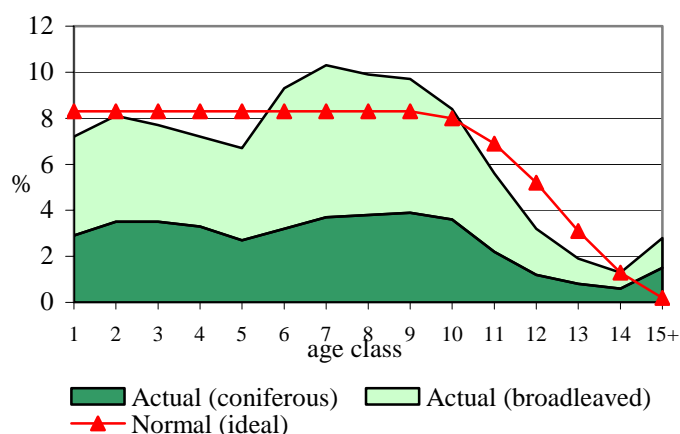
Real **forest age composition** of SR partially differs from the normal (theoretical) one. There are 538 528 ha of forests located in the 1-4 age category, 885 755 ha are located in the 5-9 age category, and 452 119 ha are located in the 10 and more age category, with clearings taking up the area of 11 640 ha.

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 (2007)
Spurce / Fir	4.9 / 14.1	18.2 / 6.7	25.9/4.0
Pine / Larch	0.7 / 0.1	4.2 / 6.7	7.1/2.4
Other coniferous	0.9	1.2	1.1
Coniferous together	20.7	37.0	40.5
Oak	19.9	17.7	13.4
Beech / Hornbeam	48.0 / 2.6	35.9 / 0.9	31.2/5.8
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	0.4/0.4
Other broadleaved	3.7	2.9	0.5
Broadleaved together	79.3	63.0	59.5

Source: NFC

Age composition of the forest in 2007



Source: NFC

◆ Forest transport network

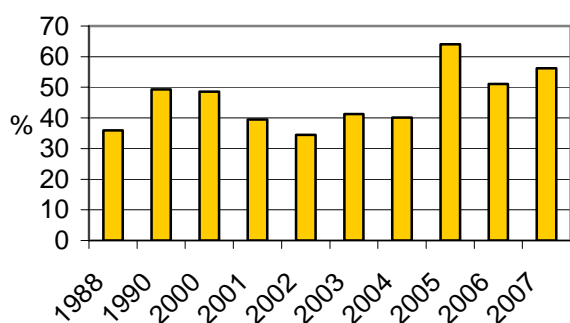
Average density of forest road network in Slovakia is $18.6 \text{ m}\cdot\text{ha}^{-1}$, while the optimum density in our conditions fluctuates between 20 to $25 \text{ m}\cdot\text{ha}^{-1}$. Length of outgoing forest roads in 2007 was **37 106 km**.

◆ Forestation and standing volume

In 2007, **13 698 ha** were forested, including 4 671 ha forested through **natural regeneration**. Share of natural regeneration has almost doubled since 1990 (currently, it represents 34.1 % of total forestation) and helps to enforce sustainable development practices in forests.

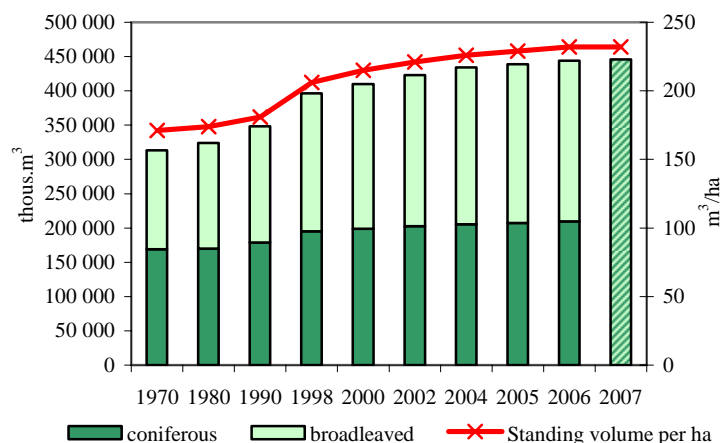
Standing volume in 2007 reached **445.8 mil. m^3** of barkless wood matter, with average stock per hectare reaching 232 m^3 . Still increasing volume of wood stock is mainly influenced by the existing age composition of the Slovak forests, with abnormally high share of most-incremental medium age levels. **Total current increment** decreased since 1990 (through changes to the age composition) and is 11 665 thous. m^3 . This trend may be considered linear since 2000.

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



Source: NFC

Trends in total standing volume



Source: NFC

◆ Timber felling

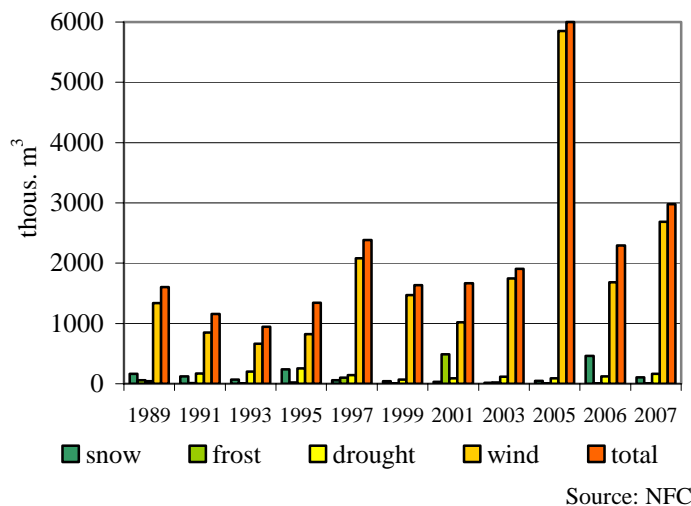
Timber felling in the Slovak forests shows an increasing tendency over a long range. In 2007, it was **8 367.1 thous. m^3** , including 5 344.2 thous. m^3 of coniferous timber. Since 1990, it has grown by 63 %. **Incidental felling** included **56.2 %** of total anticipated harvested timber (including 79.9 % of harvested coniferous trees), which significantly contributed to exceeding the anticipated harvested volumes.

Natural conditions in the SR forests allow implementing the shelter wood system on about 60 % 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 71.7 % this year; however, it still points to the sustainable use of the SR forests (timber felling is lower than the annual increment).

◆ **Injurious agents and forests condition**

As a consequence of negative impacts of wind, snow, frost, drought, and unknown **abiotic factors**, there was **2 186.8 thous. m³** of wood matter **processed** this year, with more than 88 % caused by the wind.

Trend in damages caused by abiotic agents



Damages caused by abiotic agents in 2007 (m³)

Injurious agent	Affected	Processed
Wind	2 686 833	1 943 505
Snow	108 429	92 973
Frost	4 088	4 084
Drought	165 152	131 567
Underflooding	406	406
Other abiotic agents	16 491	14 252
Total	2 981 399	2 186 787

Source: NFC

Hurricane Kyrill substantially damaged middle-European forests at the beginning of 2007. Total volume of wind clearings in Europe represented approximately 55 mill.m³, while Slovak forests were affected in a lesser degree (app. 400 thous.m³). Incidental felling by wind was realized due to newly-created clearings, especially due to a storm of August 23, 2007.

Size of individual zones with pollution risk is **1 185 845.7 ha** of forests, while forests damaged by pollution take up **20 435 ha** forests (including over 69 % of coniferous). Spruce trees take up 52.7 %, while beech trees take up 23.5 %. Majority of pollution is of trans-boundary nature – coming from industrial areas of the neighbouring countries.

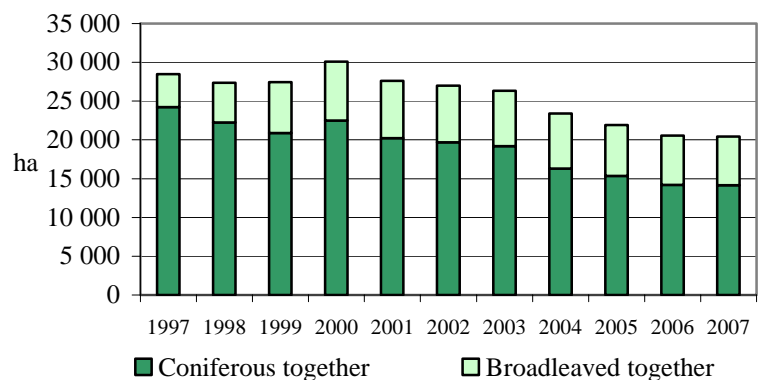
In 2007, Slovakia registered **463 forest fires** on the size of **679 ha**, causing **158 mill. SKK** in damages. Most frequent causes included burning of grass (122), setting fires in open nature (104), and manipulation with open fire (65).

Forest damage caused by anthropogenic injurious agents in 2007 (m³)

Agents	Affected	Processed
Immisions	200 021	169 547
Fires	7 654	3 250
Wood stealing	8 032	8 032
Total	215 707	180 829

Source: NFC

Trend of the air pollution forest damage

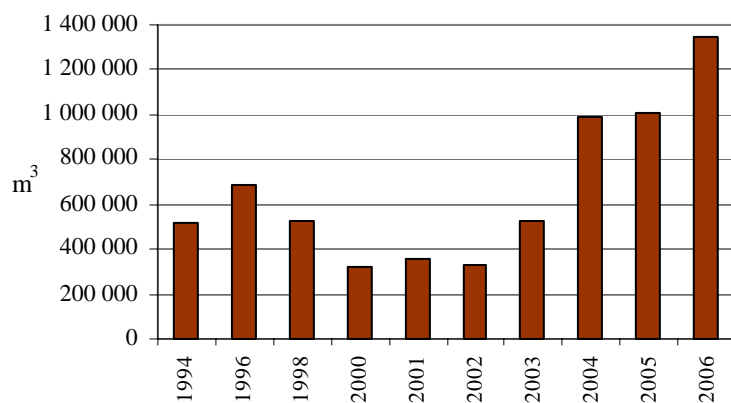


In 2007, the greatest invasion of vegetation by **bark beetles and woodworms** was recorded (as much as 2 506.8 thous. m³) with 2 024.6 thous. m³ processed. *Ips typographus* is the major harmful insect, attacking 2 325.8 thous. m³ of wood matter. In general, situation in damaged vegetation by bark-beetles and woodworms is considered very negative. **Leave-eating and sucking** insects show a permanently high occurrence of lice on young larch trees and spruce trees (*Adelges laricis* and *Sacchiphantes viridis*). *Cameraria ohridella* attacked virtually all horse chestnut trees in Slovakia.

Armillaria ostoyae, that is becoming a major harmful agent of **phyto-pathogenic micro-organisms**, contributed to decomposition of spruce trees on acidic substrates in Kysuce, Orava, the sub-Tatras regions, and in Spiš. From the economy aspect, **wood-eating fungi** cause major damage (especially root and trunk rotteness). Spruce belongs to the most affected tree type, followed by fir, beech and pine.

Total recorded damage caused by **game** was 6 150 thous. SKK. Since 1991, (24 501 thous. SKK) they have had a falling tendency. Risks of forest vegetation damaged by game are increasing.

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 2007. 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. We can say that health status of the SR forests has improved over the last years, or it has been stabilised, respectively, and fluctuations in individual years are caused mainly by climate factors.

Results of forest condition monitoring in SR in 1987-2007

Year	Tree types	Representation of trees in various damage degrees in %							
		0	1	2	3	4	1-4	2-4	3-4
1987	Coniferous	11	36	41	11	1	89	53	12
	Broadleaves	26	47	22	5	0	74	27	5
	Total	19	42	32	7	0	81	39	7
1997	Coniferous	13	45	38	3	1	87	42	4
	Broadleaves	22	55	21	2	0	78	23	2
	Total	18	51	28	2	1	82	31	3
1999	Coniferous	15	45	36	3	1	85	40	4
	Broadleaves	22	59	18	1	0	78	19	1
	Total	19	53	26	1	1	81	28	2
2001	Coniferous	12	49	37	1	1	88	39	2
	Broadleaves	18	55	26	1	0	82	27	1
	Total	16	53	30	1	0	84	31	1
2003	Coniferous	4	56	39	1	0	96	40	1
	Broadleaves	14	61	24	1	0	86	25	1
	Total	10	59	30	1	0	90	31	1
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
2007	Coniferous	5	58	36.1	1.1	0.3	95.3	37.5	1.4
	Broadleaves	19	65	14.9	1.7	0.0	81.5	16.6	1.7
	Total	13	61.8	24.0	1.5	0.1	87.4	25.6	1.6

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 4 023 monitored trees in 2007, 25.6 % were damaged, i.e. with defoliation exceeding 25 % (degrees of defoliation 2-4).
- A worse situation exists with the coniferous trees, with 37.5 % of damage trees, while only 16.6 % of the broad-leaf trees are damaged.
- Average defoliation of all tree types together in 2007 is 23.2 %, including 26.4 % of coniferous, and 20.8 % of broad-leaf.
- 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.
- 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 86.7 % of the monitored trees showed at least one sign of damage by harmful agents. Only 13.2 % of trees showed no signs of damage.
- Assessment of atmospheric deposition of the areas of intensive monitoring showed reduced sulphur deposition in the Slovak forests in 2006 by 40-50 %, when compared to 2001.

- 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 monitored territories in 2006 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.
- Due to a very dry Spring of 2007 in lowlands, there was a shortage of water stores in soil. This resulted in a stopped lateral growth of beech trees.

Results of tree defoliation in selected European countries in 2006

Country	Number of assessed trees	Degree of injury				
		0	1	2	3+4	2+3+4
Czech Republic	5 661	12.3	31.5	54.5	1.7	56.2
Hungary	28 386	41.3	39.5	13.9	5.3	19.2
Poland	7 520	27.0	52.9	19.6	0.5	20.1
Austria	3 425	57.8	27.2	10.7	4.3	15.0
Slovakia	3 975	13.9	58.0	27.0	1.1	28.1

Source: NFC

◆ Hunting

There were **1 826 hunting areas** in Slovakia in 2007, including 28 game protection territories and 10 pheasant territories. Total size of the hunting territory is **4 459 thous. ha**. There is 2 334 thous. ha of agricultural land, 1 996 thous. ha of forest land, 51 thous. ha of aquatic, and 78 thous. ha of other land. Number of hunting areas is increasing, while their average size is decreasing.

Spring stocks of the cloven-hoofed game excluding the boar game as of March 31, 2007 were higher than in the previous year.

Shooting of clove-hoofed game in 2007 was higher than in the previous year, however, it should even be higher (the shooting plan was not met).

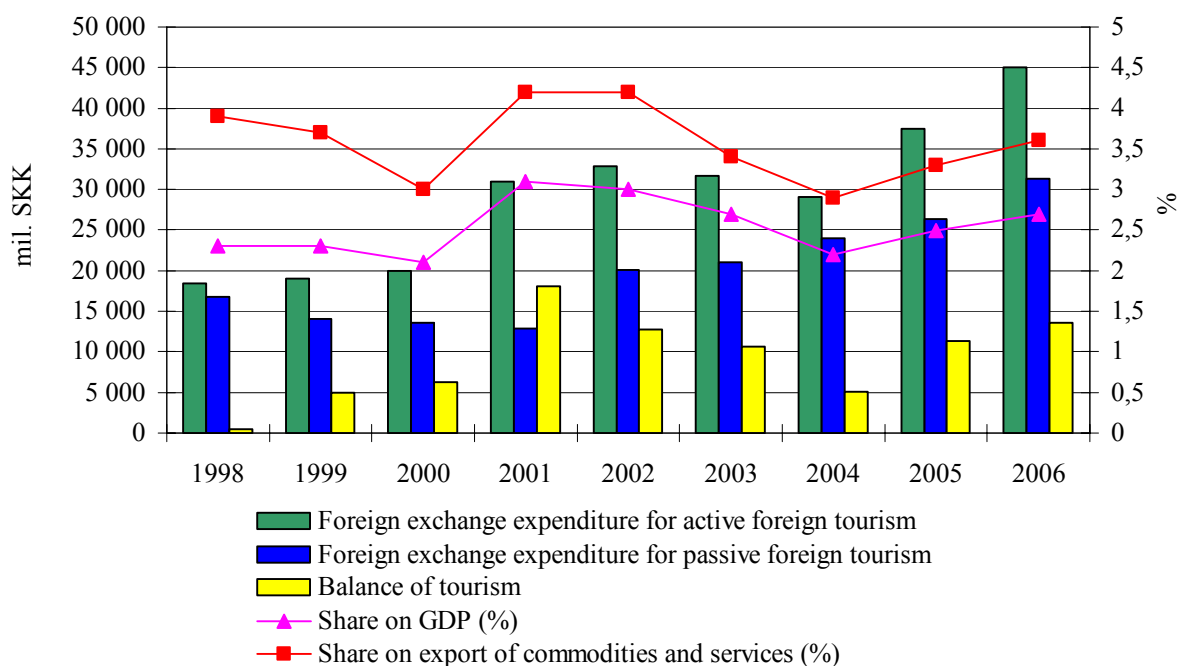
Spring stock of rabbit and turkey increased. On the other hand, spring stock of pheasant, brown hare and partridge dropped. Numbers of **large predators** increased statistically. In terms of other **rare species** of animals, compared to the previous year, their numbers increased, excluding wood grouse and hazel hen. Hunting of rare game species is strictly regulated. Permitted shooting limit of **bear** was 68, while the actual number of shot animals was only 25. 123 wolves and 8 alpine chamois were shot. Number of chamois decreased (from 665 in the last year to the present 645).

Recreation and tourism

◆ Tourism and its contribution to the GDP

Notwithstanding their fluctuating characteristics, **foreign exchange revenues for active tourism balance (AZCR) 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 commodities and services in 2005-2007.**

Tourism and its share on GDP and export between 1998-2007



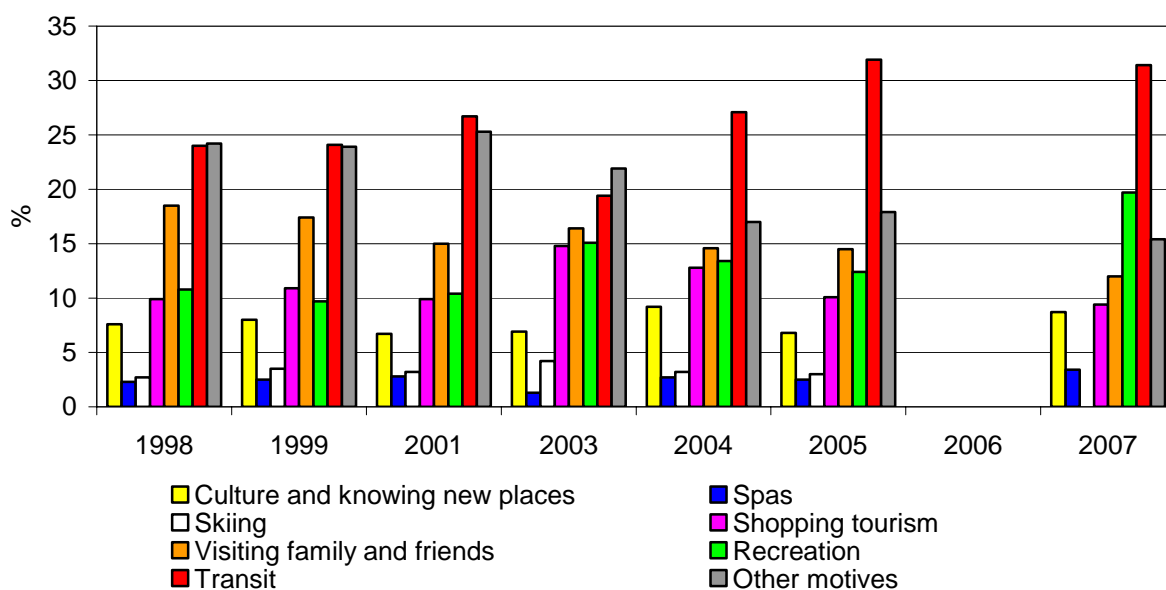
Source: SO SR

* 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

Dominant motives of the international tourists to Slovakia include activities in accordance with the requirements of sustainable development; however, high and significantly rising numbers (especially in the years 2003-2005) of transit tourists is a major challenge. Number of transit tourists slightly decreased in 2005-2007. The same may be said of the international clientele's broad number of interests over the course of the whole year, as well as individual types of tourism. Data collected for individual regions and towns may vary significantly.

Motives of international visitors to Slovakia between 1998-2007

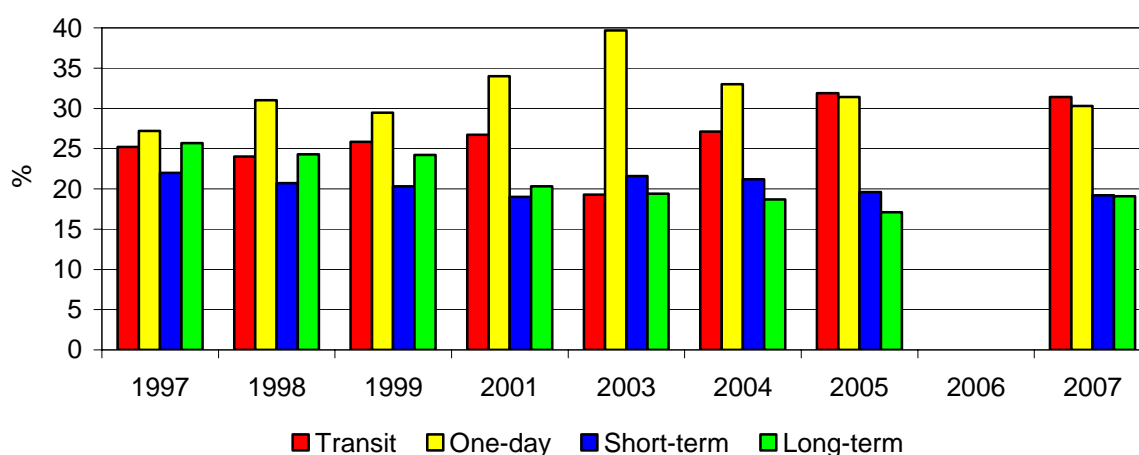


Source: MoE SR

Note. In 2006, no selection statistical survey was implemented in the area of active international tourism. For this reason it is not possible to supply information on motives of international tourists to Slovakia for 2006. In 2007, no data on the motive of skiing was surveyed.

Structure of international visitors by the length of stay is not positive. On one hand, **number of transit tourists was increasing** in the years 2003-2007, **on the other hand, number of short-stay visits, while the number of long-stay tourists stagnated.** Category of international tourists who do not use accommodation facilities (transit and one-day) has always shown one-half to two-thirds share. Category of long-term tourists who bring the greatest economic benefit to the area of tourism represents only less than one-fifth.

Types of international visitors to Slovakia between 1997-2007

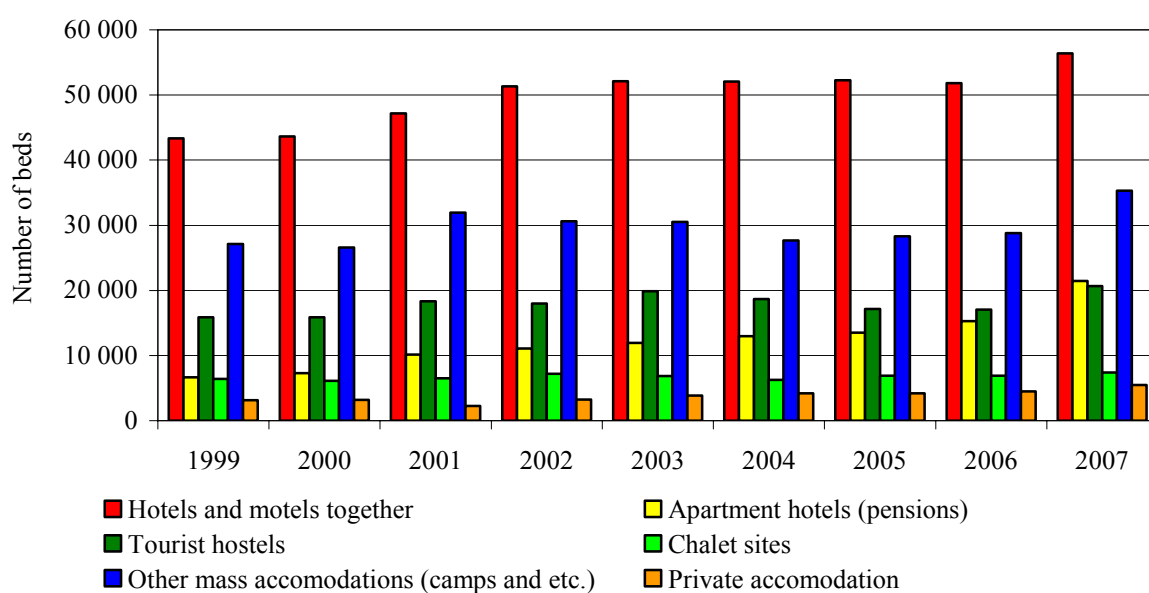


Source: MoE SR

Note. In 2006, no selection statistical survey was implemented in the area of active international tourism. For this reason it is not possible to provide any information on motivational factors of international visitors to Slovakia for the year 2006.

Increase in the bed capacity of accommodation facilities in 1999-2003 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. **With the exception of beds in pensions and recreational cabin facilities, trend in the number of beds in all other accommodation facilities stagnated in 2004-2006.** There was again a significant increase in the number of beds in all accommodation facilities in 2006-2007, especially in the case of pensions (increase by 40,3 %), tourist hostels (increase by 21,4 %), other mass accommodation (increase by 22,5 %) as well as private accommodation (increase by 22,6 %).

Capacity of tourism accommodation (number of bed places) in Slovak Republic between 1999-2007

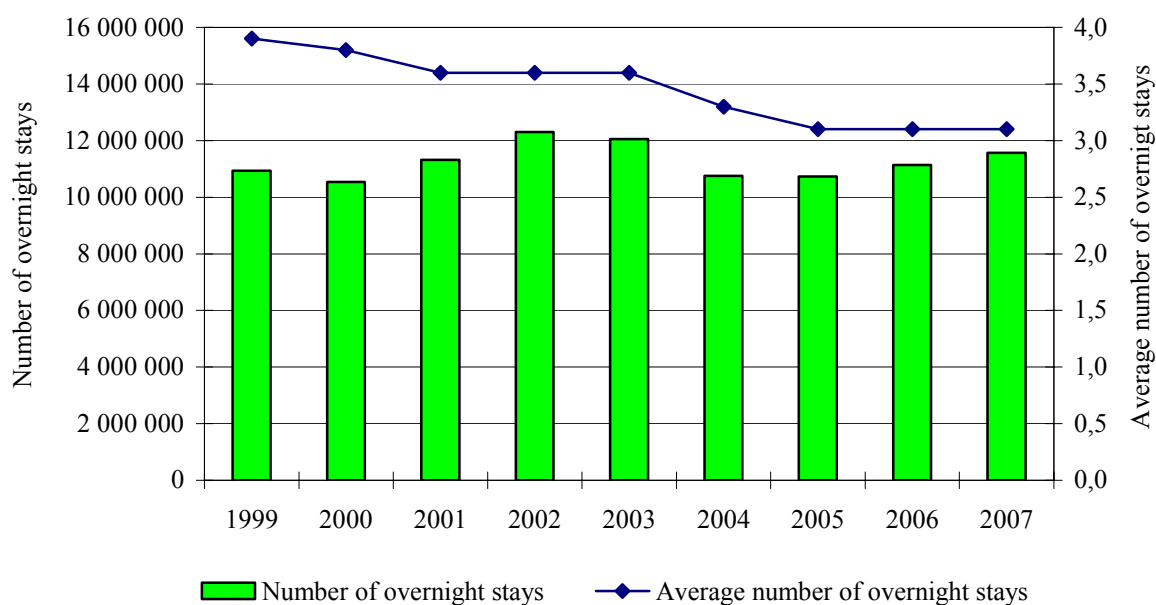


Source: SO SR

Notwithstanding the fluctuating characteristics of statistical data, **number of overnight stays** is still stagnating. Most importantly; however, **average number of overnight stays decreases continually or even stagnates.** 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 1999-2007



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. **Tourism**, being an economic sector, **does not place high demands on water, fuel, or energy consumption**. These demands, however, are normally typical for major fluctuations between high and low tourist seasons.

◆ Environmental impact of recreation and tourism

Intensity of tourist activities is not uniformly distributed over the area. Most tourist-attractive and at the same time most potentially endangered territories, due to mountain tourism activities, include especially national park territories. Sites for mountain tourism activities are concentrated within Tatra National Park (Roháčska valley in the West Tatras, and Mlynická, Mengusovská, Velická, Malá, Veľká Studená, and Skalnatá valleys in High Tatras), Low Tatras National Park (Demänovská and Jánska valleys, and northern slopes of Chopok, Bystrá valley, and southern slopes of Chopok), and Malá Fatra National Park (Vrátna valley). In terms of density of marked cycling and tourist trails, **the most fragmented territories**, in terms of their size, **are the areas of Pieniny National Park, NP Muránska Plane, and NP Slovenský raj**.

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 2001-2007

Name of protected area	Mountain climbing and rock climbing	Ski-alpinism	Camping, bivouac	Ski areas	Cross country skiing **	Bicycle marked paths **	Hiking marked paths **
The Tatranský National Park							
2001	whole territory*	6				150/0.20	600/0.81
2002	whole territory*	6				150/0.20	360/0.49
2003	whole territory*	6	1	7	108/0,14	150/0.20	690/0.93
2004	whole territory*	6	1	7	108/0,14	150/0.20	690/0.93
2005	whole territory*	6	1	7	108/0,14	150/0.20	690/0.93
2006	whole territory*	6	1	7	108/0,14	160/0.22	690/0.93
2007	whole territory*	6	1	7	108/0,14	160/0.22	690/0.93
◆ The Low Tatras 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 zones, 2 paths, 1 site)	7	6	40 + suitable tourist marked trails	718/0.39 (including national park protection zones)	800/0.44 (including national park protection zones)
2005	4	6 (3 zones, 2 paths, 1 site)	7	6	40 + suitable tourist marked trails	718/0.39 (including national park protection zones)	800/0.44 (including national park protection zones)
2006	4	6 (3 zones, 2 paths, 1 site)	7	6	40 + suitable tourist marked trails	718/0.39 (including national park protection zones)	800/0.44 (including national park protection zones)
2007	4	6 (3 zones, 2 paths, 1 site)	7	6	40 + suitable tourist marked trails	718/0.39 (including national park protection zones)	800/0.44 (including national park protection zones)
◆ 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 tourist marked trails	35	157/0.69
2006	5	-	4	2	15 + 157 tourist marked trails	35/0.15	157/0.69
2007	5	-	4	2	15 + 157 tourist marked trails	35/0.15	157/0.69
◆ The Pieniny 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

STATE OF THE ENVIRONMENT - CAUSES AND CONSEQUENCES

2005	-	-	2	1	22/0,59	15/0.4	60/1.6
2006	-	-	2	1	22/0,59	15/0.4	60/1.60
2007	-	-	2	1	22/0,59	15/0.4	60/1.60
◆ 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	50/0,39 (suitable tourist marked trails including protection zones of national parks)	118,5/0.1(inc luding Protection zones of national parks)	215/1.09
2006	5***	-	3	7	50/0,39 (suitable tourist marked trails including protection zones of national parks)	118,5/0.1(inc luding Protection zones of national parks)	215/1.09
2007	1	0	4	9	50/0,39 (suitable tourist marked trails including protection zones of national parks)	118,5/0.1(inc luding Protection zones of national parks)	215/1.09
◆ The Muránska plane 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	26/0,13	13/0.06	318/1.57
2005	2	-	3	-	26/0,13	13/0.06	318/1.57
2006	2	-	3	-	26/0,13	13/0.06	318/1.57
2007	2	-	3	-	50 + all tourist marked trails - i.e. 362 (NP including protection zones)	147 (NP including protection zones)	318 (NP including protection zones)
◆ 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	44/0.15	119/0.4
2006	-	-	2	1	119/0,4	44/0.15	119/0.4
2007	0	0	2	1	121/0,41	44/0.15	121/0.41

◆ The Slovenský karst 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
2007	1	-	5	-	Suitable tourist marked trails	38/0.19	270/0.78
◆ The Veľká 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
2007	8	1 + tourist marked trails	6	3	302/0,75	103/0.26	310/0.77
◆ Total							
2001						526/0.16	2,529/0.8
2002	9 +TANAP	8				548/0.17	2,499/0.79
2003	15 +TANAP	8	14	25	118	548/0.17	2,928/0.92
2004	18 +TANAP	13	17	25	184 + NAPANT	1,078.5 km	2,928 km
2005	25 +TANAP	13	28	27	680 + suitable tourist marked trails	1,234.5 km	2,929 km
2006	26 +TANAP	13	33		682 + suitable tourist marked trails	1,244.5 km	2,931 km
2007	21 +TANAP	13 + tourist marked trails	34	29	875 + suitable tourist marked trails	1,378.5 km	2,941 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/km²

***- include climbing the ice falls

**** - Slovenský kras a Veľká Fatra were declared national parks in 2002

Permanent 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 national parks of Low Tatras (2006-2007), Malá Fatra** (substantial erosion increase over the years 2002-2003), and **Muránska Plane National Park** (substantial erosion increase over the years 2004-

2005). **Significant erosion exists also in the territory of Slovenský Raj National Park. In 2004-2005, significant increase in erosion of marked tourist trails was recorded also in the territory of the Tatranský National Park.**

Soil erosion on documented tourist hiking trails and cyclotrails in the territories of national parks between 2001 - 2007

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
2007	19.1/1.8	957/32.9

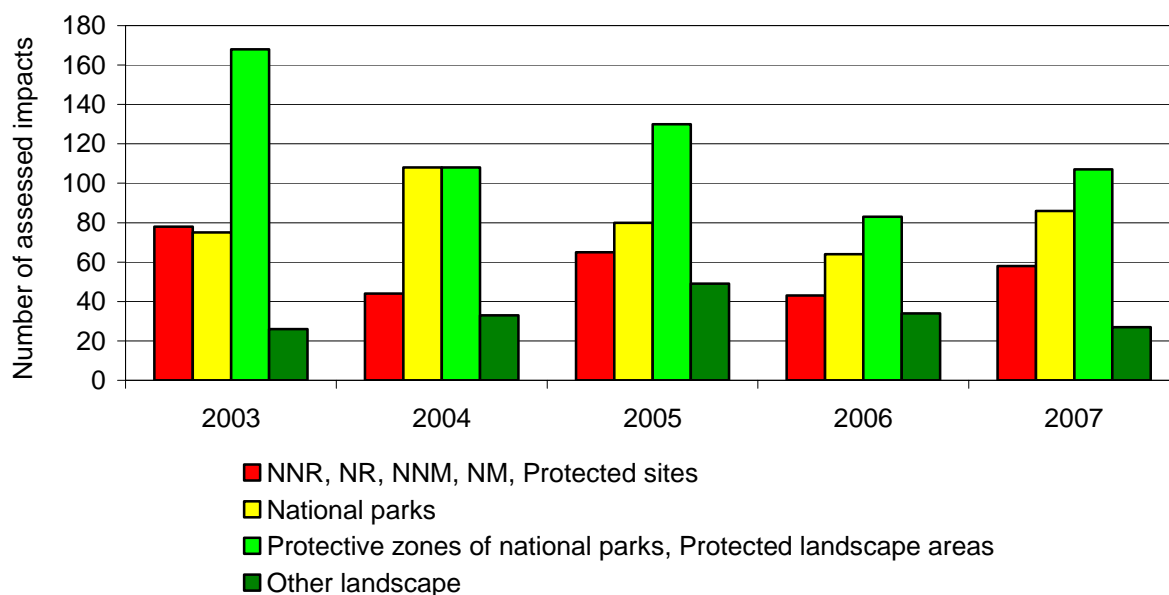
Source: SNC SR

Highest degree of endangerment of small-size protected areas from tourism exists in the following territories: Tatras National Park, NP Low Tatras, NP Malá Fatra, NP Pieniny, NP Slovenský raj, PLA Dunajské luhy, PLA Malé Karpaty, PLA Strážovské hills, PLA Poľana, PLA Cerová vrchovina, and PLA Vihorlat.

Although all categories of protected areas together cover only about 18% of the SR size, to them relate 60-80% of assessed impacts to nature and landscape that require permission of pertinent nature conservation authority (especially areas of TANAP, NP Nízke Tatry, NP Slovenský raj, and NP Malá Fatra. In the category of protected areas, most assessed impacts in 2004-2007 permanently belong to protection zones of national parks and protected landscape areas and national parks, while open landscape is least represented. With the exception of open landscape, these impacts have grown in 2006-2007.



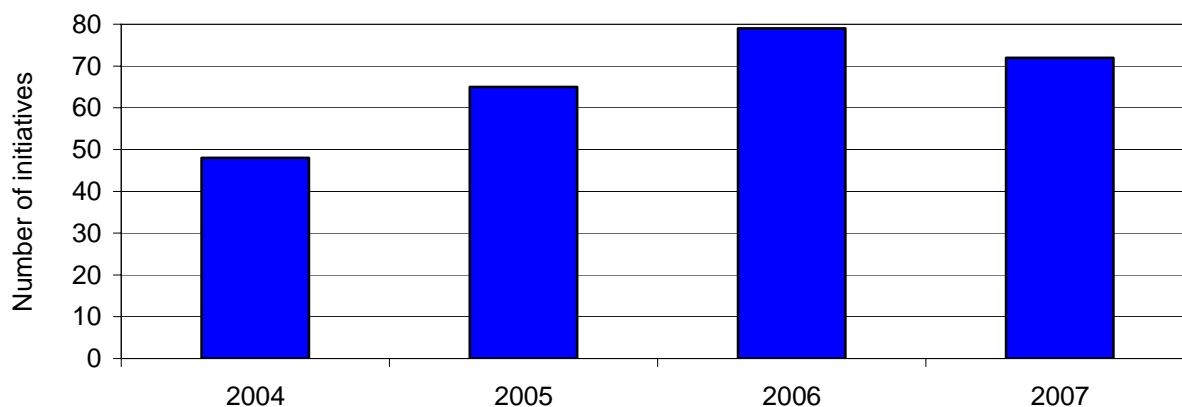
Number of assessed impacts on natural landscape related to tourism activities between 2003-2007



Source: SNC SR

In case of tourism-related initiatives that were assessed in terms of environmental impact we can say that after their very significant growth in 2004-2006, they slightly decreased in 2006-2007.

Number of initiatives related to tourism activities assessed in terms of their impact on environment between 2004-2007



Source: MoE SR